

FLIGHT

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

No. 343. (No. 30, Vol. VII.)

JULY 23, 1915.

[Registered at the G.P.O.
as a Newspaper.]

[Weekly, Price 3d.
Post Free, 3½d.]

Flight.

Editorial Office: 44, ST. MARTIN'S LANE, LONDON, W.C.

Telegrams: Truditur, Westrand, London. Telephone: Gerrard 1828.

Annual Subscription Rates, Post Free.

United Kingdom ... 15s. 6d. Abroad ... 20s. 6d.

CONTENTS.

	PAGE
Editorial Comment:	
The Art of Parliamentary Worrying ...	525
Requisition or Confiscation? ...	526
Aircraft Work at the Front. Official Information ...	528
The British Air Services ...	528
The Roll of Honour ...	529
The Huntington Tractor Biplane (with scale drawings) ...	530
Royal Aero Club. Official Notices ...	532
The Green Engine Company's 300 h.p. Aero Engine ...	533
Eddies. By "Æolus" ...	535
From the British Flying Grounds ...	537
Flying at Hendon ...	538
Aircraft and Parliament ...	539
Aircraft and the War ...	543
Models ...	545

EDITORIAL COMMENT.

The Art of Parliamentary Worrying.

A few weeks ago we drew attention to the facilities in Parliamentary procedure which exist for worrying the Government upon any subject, if the Member of Parliament be sufficiently versed in the art of selecting his opportunity for interpolation, and we mentioned Mr. Joynson-Hicks as being a past master in his methods of getting his own way in this respect. Whilst fully realising the necessity for, and the value of, keeping those in power up to concert pitch in relation to their duty to the country by means of criticism in the House of Commons, there are times when, like the present, a wider interpretation to discretion should be exercised in directing all sorts of insinuations under the cloak of seeking for information. In his very able speech in the House on Tuesday night, when he got back to "more aeroplanes," via the Supplementary Vote of Credit, Mr. Joynson-Hicks fully laid himself out for the pretty smart rebukes which were meted out to him by the Prime Minister. His *resumé* of past work and shortcomings in connection with the Flying Services was instructive as an introduction to his onslaught, and there was not one member present who did not cordially echo all the eulogies which Mr. Joynson-Hicks showered on the members of the Royal Flying Corps. But the mere

reiteration of well-known facts as they stand does not alter those facts, and if there is practically no way, under the exceptional circumstances existing, of carrying into effect the suggested remedy for any negligence in the past when more normal conditions prevailed, it is as well to leave matters alone, rather than re-stir up the mud, merely for the sake of it. Mr. Joynson-Hicks in a measure recently identified himself with the very laudable, although over-sanguine scheme for the immediate supply of 10,000 and even 20,000 aeroplanes, with all their necessary "appendages" in the shape of pilots (presumably efficient), engines, spares, replacements, and general *entourage* concerned with aeroplanes in the field. We thought this much-pushed method of ending the war quickly had run its natural course, and had been allowed to sink into the oblivion from whence it should never have been brought. True, in his plea for more and more aeroplanes, and massed attacks by flights of war-planes, on Tuesday, Mr. Joynson-Hicks carefully avoided getting down to such details as batches of 2,000 at a time. But, throughout his remarks, Mr. Joynson-Hicks seldom got far away from one point, viz., that the Government were neglectful of their duties in regard to the supply of aircraft for the R.F.C., and that those directing the affairs of the nation in this connection, it was inferred, were entirely devoid of all initiative in regard to going forward with plans for keeping our Flying Services in a paramount position to control the airwork of the enemy. The Prime Minister, in his reply, dealt with this side of the discussion in no hesitating manner, and in speaking as he did he, we believe, voiced the feeling of all those who matter. We wish we could think that Mr. Joynson-Hicks represents the views of those for whom he pleads in an equal degree. Nobody can—in theory—disagree with most of what Mr. Joynson-Hicks puts forward for the enlargement of the aircraft section of our forces, but there is a hugely wide gulf between one's desires and the possibilities of their being realisable in practice. Hence the futility of all these attacks—even if they be, as they without question are, friendly and well-meant attacks. Such speeches can hardly help our cause, and either Mr. Joynson-Hicks does know this to be so or should know it. On the other hand, as it was very clearly intimated, benefit may, and probably does, accrue to our enemies from such oratorical displays by a representative of the people in the British House of Commons. We give elsewhere a full report of the debate in the House, and this, we think, will speak for itself to our

readers, so that we need not discuss the various aspects of the statements made during the discussion. Most of the suggestions are so obviously ideals to be sought for, where there is a chance of their fulfilment, and where there is any merit in those proposals they will be found to have been regular planks in the campaign in past years so regularly fought in the columns of *Flight* in the interests of the well-being of the British Empire and the industry. We do not question that it may be possible to speed up the number of pilots securing certificates, but it is something far beyond this phase which is necessary if anything like an appreciable effect is to be felt. This is certainly realised by Mr. Joynson-Hicks, as one of the reproaches brought by him against the result of too rapid training was that observers had had their lives "placed at the disposal" of men who had only been in the air five hours altogether before taking part in active operations. In another case he cited the instance of a pilot who "had been only three months" training, and had been only eleven hours in the air. This may certainly, as he suggested, be by reason of the shortage of machines, but it also emphasises the fact that really efficient pilots *as a rule* are not to be trained in a hurry. One point Mr. Joynson-Hicks made will no doubt be well received by most people, that is the suggestion that the observers who go up with the pilots should be entitled to wear a distinguishing badge, similar to the pilots themselves. They are, he rightly claimed, risking their lives equally with the officer in charge of the plane, and should therefore have equal consideration with him. However, this is a matter of detail which no doubt when considered in the proper quarter will bear fruit. In regard to many of the statements put forward in the form of queries the Under-Secretary of War disposed of these in such unequivocal terms as to convince of the incorrect information upon which the question had been based. In his concluding remarks Mr. Joynson-Hicks was much more sympathetic in his choice of words. His appeal to the Government to develop the aerial arms of the Forces at the highest possible speed, by reason of the possibility of the war continuing for some considerable period longer, and there being, therefore, still time for effective progress, will raise an echo of approval throughout the country, but, as we have recently pointed out again and again, the general demands of the war are so multitudinous and vital that very much greater danger might emerge from any effort to specialise in any one particular branch, to the neglect of other proved methods of attack and defence. Mr. Asquith was very convincing upon this view. His emphatic statement that the supreme importance of aircraft was realised to the fullest extent by the Government and the military and naval authorities, should for the time being silence all adverse criticism, which cannot possibly lead to any beneficial end.

Requisition or Confiscation? A case of some mystery, by reason of the official suppression of the name of the appellant company, was last week disposed of by the Court of Appeal. It was of more than passing interest to the public generally, as it dealt with the prerogative of the Crown to take possession of any and all property throughout the Kingdom without the legal liability to pay any compensation to the owners. To the aviation world, and therefore to our readers, this particular case appeals more directly, as it transpired in the statements of counsel that the appellant company's claim for compensation was in connection with the re-

quisition—or is it confiscation?—of an aerodrome in the occupation of the company. On their behalf, although it was not questioned as to the right of the Crown to take over the aerodrome, having regard to the requirements of the country under present war conditions, it was contended that in such circumstances there should be compensation to them for the "forcible" acquisition of their business premises whilst being run as a going concern. To most people this would not appear to be an unreasonable proposition, as after all, however loyal to one's King and fellow citizens one may be, it is not an honour to rejoice over that you should personally be practically wiped out for the general good—nominally the Crown—without the general purse being liable to share the honours by paying for the privilege. If, as it would appear from the arguments on behalf of the Crown, upheld by the Court of Appeal, the prerogative of the Crown legally entitled it to make this very one-sided bargain, the sooner it is set right the better. True, it was admitted that "as a matter of grace" the King might consider the giving of compensation. But surely in this year of our Lord nineteen hundred and fifteen we should have done with such "acts of grace." The loyal citizen desires no such act of grace. His desire is to serve his King and country in their need to the best of his ability, coupled with the right in return for justice as an individual suffering by necessity of circumstances in the common cause of the community. And that should carry with it compensation for compulsory acquisition—always provided there is anything to show there is compensation due.

In this connection we have no knowledge of the particular case as to whether any or how much compensation might be morally due, or whether it may be a case of relief to the owner to acquire the premises. We express no opinion whatsoever therefore on this point. But that the Crown should be at liberty to seize any and all property at its own sweet will, without even an iota of right on the part of the owner to claim compensation for whatever it may be worth, appears to be going away back to the dark days of feudalism.

The war is a people's war, and any circumstances that compel the acquisition of any particular properties for the carrying on of that war to the best advantage of the country should carry with them the only possible issue to justice, viz., fair compensation to be borne by the nation as one of the necessary direct outgoings brought about by the war. We have no politics in the editorial department of *Flight*, whatever our individual personal views may be, although perhaps some may consider this is more a political question. We do not, however, agree with that view. But one object governs our writings and our policy of conducting this journal, and that is the highest interests of aviation and all concerned with it, always having regard to the holding of a just balance in relation to the rights of the other great interests in this very erratic world. From the first number of *Flight*, seven years ago, we have never had any particular axe to grind, and have no interest direct or indirect in any concern associated with the industry, and we have never hesitated to praise or condemn without fear or favour, whenever occasion has appeared to us to arise. In the same sense we now feel that we cannot let pass by without protest such an apparent iniquity as this judgment, holding as right that any property whatsoever and no matter to whom belonging may be "requisitioned" without compensation, should hold as the supreme law of this land.



THE COUNTRY, AS SEEN FROM AN AEROPLANE.—View of Hendon Aerodrome from a 50 h.p. Grahame-White biplane, piloted by Mr. Winter, at an altitude of 400 ft. From a sketch actually made during the flight by the artist, Mr. Roderic Hill. In the distance is the Midland Railway and Hendon Hill, surmounted by the church. The elevator of the machine is seen in front right across the picture.

AIRCRAFT WORK AT THE FRONT.

OFFICIAL INFORMATION.

In the *communiqué* issued in Paris at midnight on the 16th there was the following:—

"A squadron of ten aeroplanes this morning dropped forty-six shells of 75 mm. and six heavy bombs on the railway station at Chauny, where important dépôts of material are concentrated. The outbreak of two fires was noticed. A barge blew up on the canal of the Oise."

In the evening *communiqué* on Monday it was stated:—

"One of our aeroplanes pursued an Aviatik and brought it down with machine-gun fire. The machine, which was in flames, fell in the German lines near Soissons. Our artillery completed its destruction."

The following correction to a German *communiqué* was also issued in Paris on Monday:—

"AVIATION.—One of our aeroplanes came to earth near Souchez in our lines. The aviators were slightly wounded."

In the *communiqué* issued in Paris on Tuesday afternoon, it was stated:—

"A squadron of six aeroplanes, on the morning of the 20th, bombarded the station at Colmar. Eight shells of 150 mm. (6 in.) and three of 90 mm. (3½ in.) were launched upon the buildings, the rails, and the trains. The main station and the goods station must have been damaged. No shell was dropped on the town. The French machines returned undamaged. Four aeroplanes, on the 19th, dropped forty-eight shells on the junction station of Challange, to the south of Vouziers."

In the evening *communiqué*, there was the following:—

"Last night one of our dirigibles dropped twenty-three bombs on the military railway station and on an ammunition dépôt at Vigneulles-les-Hattonchatel. The airship returned unharmed to our lines."

The *communiqué* issued in Rome on the 17th contained the following:—

"During the night of the 16th two of our dirigibles bombarded the enemy's works around Gorizia and the enemy's camps on the northern slopes of Mount San Michele in Carso with satisfactory results. The dirigibles,

which were continually lit up by the enemy's flares and made the object of heavy artillery fire, returned safely to our lines at daybreak."

According to an official statement issued in Rome on the 17th inst., three Austrian aeroplanes flew over Bari this morning, dropping eight bombs. Six persons were killed and several injured. The population kept quite calm. No damage was done to property.

On Sunday the following official note was issued:—

"One of the Austrian aeroplanes which yesterday dropped bombs on Bari was hit during its return by our rifle fire, and dropped into the sea near Barletta. The machine was reached by a fishing boat manned by two infantry soldiers and two official guards, who captured the two Austrian officers."

In the *communiqué* issued in Rome on Monday it was stated:—

"Since the date of the last *communiqué* on the 7th inst., the navy has had to develop an intense action with warships and aerial weapons against the enemy's coasts on the Upper and Lower Adriatic."

"Among the most remarkable feats carried out by our aircraft should be mentioned the bombardment on July 7th by one of our dirigibles of the Stabilimento Tecnico at Trieste, which had already been seriously damaged in the preceding attack on July 4th. On that occasion the bombs dropped on these important works caused an outbreak of fire, which was visible at a distance of 40 kilometres (25 miles).

"Bombs were dropped by our waterplanes on Austrian destroyers concentrated in the Fasana Canal, near Pola, on July 14th. A bombardment was effected by two of our waterplanes against the batteries near the Salvore Lighthouse on July 14th. A heavy bombardment, which had excellent results, was carried out by one of our dirigibles against the railway station at Grignano and the neighbouring works of the Trieste-Monfalcone railway on July 16th.

"On July 17th, an enemy waterplane, forming part of a squadron which had flown over Bari and Barletta, was captured with the two officers who manned it."

THE BRITISH AIR SERVICES.

UNDER this heading are published each week the official announcements of appointments and promotions affecting the Royal Naval Air Service and the Royal Flying Corps (Military Wing) and Central Flying School. These notices are not duplicated. By way of instance, when an appointment to the Royal Naval Air Service is announced by the Admiralty it is published forthwith, but subsequently, when it appears in the LONDON GAZETTE, it is not repeated in this column.

Royal Naval Air Service.

THE following appeared among the Admiralty announcements of the 15th inst.:—

Flight-Commander H. C. Fuller to "Manica," vice Mackworth. July 13th.

Surgeon Probationer (R.N.V.R.) C. R. Mackenzie transferred to R.N.A.S. as a Flight Sub-Lieutenant, on probation, for temporary service. To date July 14th.

H. Sherwood and F. U. Y. Weldon have been entered as Probationary Flight Sub-Lieutenants, for temporary service, with seniority of July 14th and 17th respectively.

Temporary commissions as Lieutenants (R.N.V.R.) have been granted to J. K. Curwen, H. C. Greenwood, D.Sc., and B. T. Hamilton, with seniority of July 2nd, 13th, and 14th respectively.

The following appeared among the Admiralty announcements of the 16th inst.:—

Flight-Commander (late Lieut., R.N.) C. Hornby placed on the

Emergency List of R.N. as Lieutenant-Commander, with seniority of December 31st, 1909, and appointed to "President," additional, for Hendon Naval Air Station, in command.

The following entries have been made: L. F. Paine, as Probationary Flight Sub-Lieutenant, for temporary service, with seniority of July 18th; C. J. Walters and A. C. Wright, as Warrant Officers (2nd Grade), for temporary service, with seniority of July 15th; and all appointed to "President," additional, for R.N.A.S.; W. P. Nicholls granted a temporary commission as Sub-Lieutenant (R.N.V.R.), with seniority of July 15th, and appointed to "President," additional, for R.N.A.S. (Armoured Cars).

The following appeared among the Admiralty announcements of the 17th inst.:—

Temporary Sub-Lieuts. (R.N.V.R.) W. G. Chambers, R. B. Hay, and T. S. Sharratt all promoted to temporary Lieutenants, with seniority of July 15th.

The following have been entered as Probationary Flight Sub-Lieutenants, for temporary service, with seniority as follows: P. Laing and C. R. Carr, July 9th; and S. J. Goble, July 13th, all appointed to "President," additional, for R.N.A.S.

Temporary commissions have been granted as follows: H. E. Hickmott, E. E. Adams, and D. C. M. Hume as Lieutenants (R.N.V.R.); E. F. Turner, B. Thomson, C. A. Crow, and T. M. Wilson, as Sub-Lieutenants (R.N.V.R.), all with seniority of July 16th, and all appointed to "President," additional, for R.N.A.S.

The following appeared among the Admiralty announcements of the 18th inst. :—

Alan T. Lee and Henry M. Lyons have been granted temporary commissions as Sub-Lieutenant, R.N.V.R., and appointed to the "President," additional, for R.N.A.S. To date July 17th.

Frank Towers, A.B., R.N.V.R., has been granted a temporary commission as Sub-Lieutenant, R.N.V.R.

Acting Flight-Lieut. Lionel D. McKean, also Probationary Flight Sub-Lieuts. Laurence H. F. Irving, Arthur F. F. Jacob, Thos. F. N. Gerrard, Frank Fowler, Edward A. de L. de Ville, Cyril C. Carlisle (temporary), W. A. K. Dalzell (temporary), Arnold H. Sandwell (temporary), John C. Croft, L. A. Hervey (temporary), J. H. Rose, J. E. B. Maclean, H. F. Towler, C. F. Latimer, J. E. D. Boyd (temporary), R. F. S. Leslie, R. Y. Bush (temporary), C. B. C. Williams, C. L. Scott, Cuthbert E. Brisley, and F. J. Bailey, all confirmed in rank, with original seniority.

The following appeared in the LONDON GAZETTE of the 20th :—

July 15th.—In accordance with the provisions of his late Majesty's Order in Council of May 13th, 1901, the following gentleman, now a temporary Flight-Commander, and formerly a Lieutenant in His Majesty's Navy, has been placed on the Emergency List as Lieutenant-Commander: Christopher Hornby; seniority December 31st, 1909.

Royal Flying Corps (Military Wing).

The following appeared in a supplement to the LONDON GAZETTE issued on the 14th inst. :—

Flying Officer.—Lieut. Ronald F. Morkill, Prince of Wales's Own (West Yorkshire Regt.) (since killed on duty). June 21st.

Supplementary to Regular Corps.—The appointments of Second Lieuts. (on probation) George S. Bower and Walter E. Baylis, which appeared in the GAZETTES of April 17th, 1915, and June 21st, 1915, respectively, are cancelled. July 31st, 1915.

The following appeared in a supplement to the LONDON GAZETTE issued on the 15th inst. :—

Wing-Adjutant.—Capt. Cecil Fraser, Prince of Wales's (North Staffordshire Regt.), and to be seconded. June 21st, 1915.

Flying Officers.—June 24th, 1915: Second Lieut. John W. Woodhouse, Special Reserve; Second Lieut. Percy D. Robinson, Special Reserve.

Supplementary to Regular Corps.—Second Lieuts. (on probation) confirmed in their rank: John W. Woodhouse and Percy D. Robinson.

The following appeared in the LONDON GAZETTE of the 16th :—

Assistant Equipment Officers.—Capt. R. Hall, 3rd Batt. (Reserve) Cheshire Regt.; May 10th, 1915. July 1st, 1915: Second Lieut. W. H. T. Rampling-Rose, Special Reserve; Second Lieut. R. G. Bennett, Special Reserve; Second Lieut. G. P. Grenfell, Special Reserve; Second Lieut. S. E. Neal, Special Reserve.

Supplementary to Regular Corps.—The appointment of Second Lieut. (on probation) Walter V. Falkiner, which appeared in the GAZETTE of June 23rd, 1915, is cancelled. July 3rd, 1915.

Second Lieutenants (on probation) confirmed in their rank: George P. Grenfell, Samuel E. Neal, and Rex. G. Bennett.

The following appeared in a supplement to the LONDON GAZETTE issued on the 17th inst. :—

Wing-Adjutant.—Capt. Henry S. Walker, Cheshire Regt., and to be seconded, vice Brevet Maj. E. B. Gordon, Northumberland Fusiliers. June 27th, 1915.

Supplementary to Regular Corps.—The appointment of Second Lieut. (on probation) Gerrit Forbes, notified in the GAZETTE of June 12th, 1915, is antedated to May 12th, 1915.

The following appeared in a supplement to the LONDON GAZETTE issued on the 19th inst. :—

Flying Officers to be Flight-Commanders.—Lieut. Harold Blackburn, Special Reserve, and to be temporary Captain whilst so employed; Lieut. Malcolm McB. Bell-Irving, Special Reserve, and to be temporary Captain whilst so employed; Capt. John G. Hearson, R.E. July 3rd, 1915.

Flying Officer.—Second Lieut. Robert G. Gould, Special Reserve. June 29th, 1915.

The following appeared in the LONDON GAZETTE of the 20th :—

Flying Officers.—July 5th, 1915: Lieut. L. A. Pattinson, 5th Batt. (Territorial) Durham L.I.; temporary Lieut. A. E. G. MacCallum; Second Lieut. G. A. Porter, R.A., and to be seconded.

Supplementary to Regular Corps.—Second Lieut. (on probation) Robert G. Gould is confirmed in his rank.

To be Second Lieutenants (on probation): James L. Finney; July 6th, 1915. George E. W. Humphrey; July 12th, 1915.

THE ROLL OF HONOUR.

The following casualties in the Expeditionary Force have been officially reported from General Headquarters :—

Under date July 3rd :

Died of Wounds.

1st Class Air-Mechanic T. H. Sutcliffe.

Under date July 9th :

Killed.

Lieutenant L. Playfair, 1st Royal Scots, attached R.F.C.

Wounded.

Second Lieutenant R. H. Peck, 5th Dorset Regt., attached R.F.C.

Under date July 10th :

Killed.

Second Lieutenant M. H. Monckton, R.G.A., attached R.F.C.

Under date July 11th :

Wounded.

Captain R. H. Austin-Sparks, R.F.A., attached R.F.C.

Under date July 14th :

Missing.

Captain B. T. James, R.E., attached R.F.C.

Under date July 15th :

Missing.

Second Lieutenant W. N. Crabbie, R.F.A., 1st Lowland Brig. (T.F.), attached R.F.C.

Second Lieutenant H. M. Goode, 2nd County of London Yeomanry (Westminster Dragoons) (T.F.), attached R.F.C.

Undated from Persian Gulf :

Died.

2nd Class Air-Mechanic F. A. Stuttard.

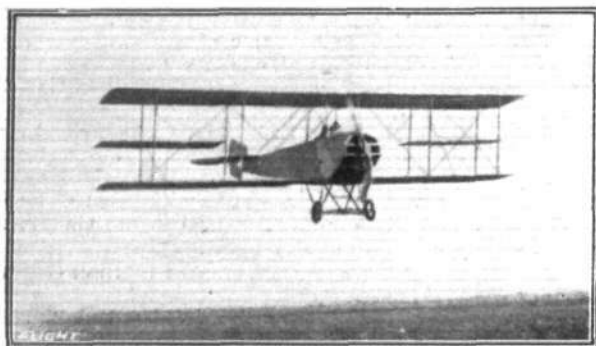


The Mann biplane, with the new landing chassis.

"Flight" Copyright.

THE HUNTINGTON TRACTOR BIPLANE.

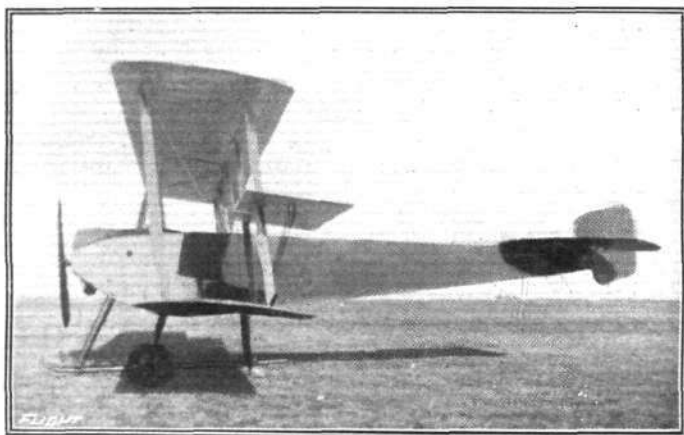
THE Huntington tractor biplane, which made its first appearance last March at Hempstead Plains, U.S.A., has been constructed to the designs of H. P. Huntington by Harold Kantner, whose name is no doubt known to our readers in connection with the Kantner-Moisant



The Huntington tractor biplane in flight.

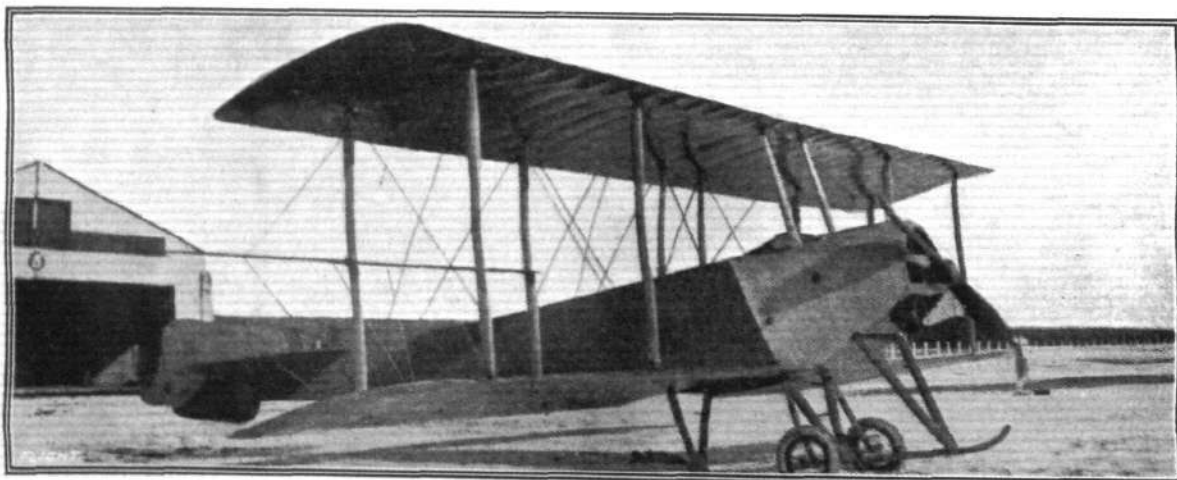
monoplane. From accounts of trials it appears that the Huntington is a very efficient machine, the speed range, fully loaded, being claimed to be from 45 to 76 miles per hour, although it is fitted with an engine of but 80 h.p. and is by no means a small machine, being 36 ft. span. Both top and bottom planes are of the same span, but the top plane is staggered forward 1 ft. 3 ins., and is given an angle of incidence of 4° , whilst that of the lower planes is $2\frac{1}{2}^{\circ}$. The wing section is very similar to that of the Nieuport, in that the leading and trailing edges are slightly upturned, but in the Huntington there is a little less camber. The planes are built up much in the ordinary way on two main spars, the front one being situated 9 ins. from the leading edge and the rear one 1 ft. 3 ins. from the trailing edge. The spars are of I-section, except at the junctions with the interplane struts, where they are solid and of rectangular section. A neat and simple method of attaching the interplane struts to the spars is employed, whereby the latter are not pierced. Two steel plates, one bent to a U, are clamped to the main spar by two $\frac{3}{16}$ in. Blériot type U bolts, which pass over the plates and around the spar. The U plate receives the end of the strut, on which is a steel ferrule having notches cut in it to clear the U bolt, and the strut is held in position by a bolt passing through it and the U

plate. The ends of the second plates are bent up and serve as anchorages for the wire bracing turnbuckles. Between these two plates and the spar is a fibre angle piece which brings the socket and the strut into the correct alignment, and obviates the necessity of cutting the ends of the struts at different angles. The bottom plate is in two parts and is attached to the second and third main body struts, which are of oval section steel tube. The top plane is in three parts, the two outer portions being attached to a small central panel which is supported above the body by four struts. Two pairs of struts on either side of the body separate the top and bottom planes. Hinged to the rear members of these struts, midway between the planes, are the balancing flaps. These are controlled by a single cable which is attached to the top of the flaps only. Rubber cords anchored to the rear spar of the lower plane are attached to the under sides of the flaps, so that when one is pulled up the slack of the cable to the other is taken up by the pull of the rubber cord and this flap is thereby pulled down. In this way a double acting or

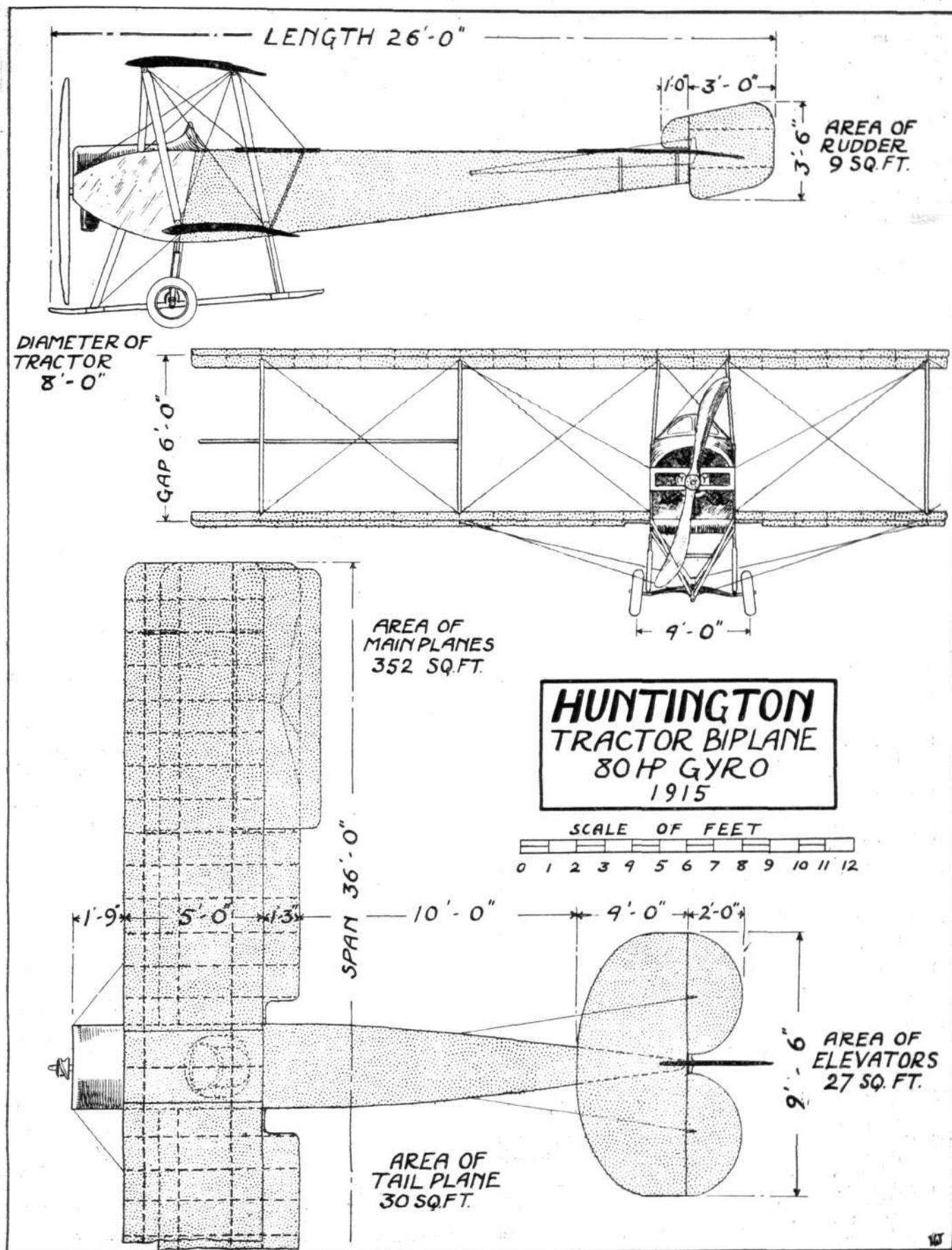


Side view of the 80 h.p. Huntington tractor biplane.

interconnecting arrangement is obtained. The tail planes are similar to those on the Nieuport, consisting of a semi-circular stabilising surface, to the trailing edge of which are hinged two similarly shaped elevators. The rudder, however, differs from that of the Nieuport, being nearly rectangular in shape with a small surface forward of the pivoting axis. All the tail planes



Three-quarter front view of the 80 h.p. Huntington tractor biplane.



THE HUNTINGTON TRACTOR BIPLANE.—Plan, side and front elevation to scale.

are constructed of steel tubing braced together. The body is also similar to that of the Nieuport, being of rectangular section, very deep in the vicinity of the pilot's cockpit. The body is built up of wood, except for the first three struts, which are of oval section steel tubing. The whole of the body is covered with fabric, except for the front portion forward of the cockpit, which is covered with sheet aluminium. The engine, an 80 h.p. 7-cyl. Gyro, is supported by front and rear mountings in the nose of the body, large openings being cut in the front of the aluminium cowl for cooling purposes. Behind the engine is the pilot's seat, immediately behind which

is that for the passenger, who sits close up as in the Morane Saulnier. The control is of the usual wheel and rocking column, and rudder-bar type. The under-carriage is a modified Nieuport type consisting of a central tubular steel skid attached to the body by three pairs of V streamlined section steel struts, and a pair of wheels attached to a laminated steel spring mounted in the centre of the central skid. Two auxiliary spiral springs mounted within telescopic tubes, extending from the body to the stud axles, add greatly to the steadiness of the machine when taxiing on the ground. The weight of the machine empty is 925 lbs.



The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

SPECIAL COMMITTEE MEETING.

A SPECIAL MEETING of The Committee was held on Tuesday, the 20th inst., when there were present: Prof. A. K. Huntington, in the Chair, Mr. Griffith Brewer, Mr. Ernest C. Bucknall, Mr. A. Mortimer Singer and the Assistant Secretary.

Election of Members.—The following New Members were elected:—

- 2nd Lieut. Alan Wilmoit Davies, R.F.A.
- Flight Sub.-Lieut. Edmund Parfitt Hardman, R.N.A.S.
- H. McClelland.
- Donald Campbell MacLachlan.
- Lieut. Philip Litherland Teed, R.N.V.R.

Aviators' Certificates.—The granting of Aviators' Certificates Nos. 1391-1415 was confirmed.

The granting of the following Aviators' Certificates was confirmed:—

- 1416 2nd Lieut. Allan Murray Jones (46th Infantry) (Bristol Biplane, Central Flying School, Werribee, Australia). May 10th, 1915.
- 1417 2nd Lieut. Eric Landon Simon on (Melbourne University Rifles) (Bristol Biplane, Central Flying School, Werribee, Australia). May 10th, 1915.
- 1418 Lieut. William Sheldon (Royal Australian Field Artillery) (Bristol Biplane, Central Flying School, Werribee, Australia). May 12th, 1915.
- 1419 Lieut. Henry Douglas Eyre Ralfe (Royal Australian Garrison Artillery) (Bristol Biplane, Central Flying School, Werribee, Australia). May 12th, 1915.
- 1420 Lieut. Vincent Hall (Bristol Biplane, Central Flying School, Werribee, Australia). May 12th, 1915.
- 1421 2nd Lieut. Raymond Francis Galloway (25th Australian Engineers) (Bristol Biplane, Central Flying School, Werribee, Australia). May 12th, 1915.
- 1422 2nd Lieut. Lionel Ernest Cooke (33rd Australian Engineers) (Bristol Biplane, Central Flying School, Werribee, Australia). May 20th, 1915.
- 1423 Capt. Leoline Jenkins, R.G.A. (Maurice Farman Biplane, Military School, Farnborough). July 6th, 1915.
- 1424 2nd Lieut. Sydney Haywood (East Lancs. Regt.) (Maurice Farman Biplane, Military School, Ruislip). July 8th, 1915.
- 1425 Edward A. Kelly (Maurice Farman Biplane, Military School, Brooklands). July 12th, 1915.
- 1426 Eric John Furlong (Hall Biplane, Hall School, Hendon). July 12th, 1915.
- 1427 2nd Lieut. Charles Henry Elliott-Smith (Bedfordshire Regt.) (Maurice Farman Biplane, Military School, Shoreham). July 13th, 1915.
- 1428 Capt. Henry Dalby Dryden-Smith (Durham Light Infantry) (Maurice Farman Biplane, Military School, Shoreham). July 13th, 1915.
- 1429 2nd Lieut. Douglas Tweedie-Smith (Middlesex Regt.) (Maurice Farman Biplane, Military School, Shoreham). July 13th, 1915.
- 1430 2nd Lieut. Justin Howard Herring, R.F.C. (Maurice Farman Biplane, Military School, Brooklands). July 13th, 1915.
- 1431 Geoffrey Hamilton Norman (Maurice Farman Biplane, Military School, Birmingham). July 13th, 1915.

The following Aviators' Certificates were granted:—

- 1432 2nd Lieut. Edward Pellew Plenty (Manchester Regt.) (Maurice Farman Biplane, Military School, Farnborough). June 2nd, 1915.

- 1433 2nd Lieut. Cyril Robertson Bertram, R.F.C. (Maurice Farman Biplane, Military School, Shoreham). July 4th, 1915.
- 1434 Geoffrey Ingram Taylor (Maurice Farman Biplane, Military School, Brooklands). July 10th, 1915.
- 1435 Harold Winstone Butterworth (Maurice Farman Biplane, Military School, Brooklands). July 10th, 1915.
- 1436 Hubert George Salmond (Maurice Farman Biplane, Military School, Brooklands). July 13th, 1915.
- 1437 2nd Lieut. Charles Edward Hastings Medhurst (Royal Inniskilling Fusiliers) (Maurice Farman Biplane, Military School, Farnborough). July 13th, 1915.
- 1438 2nd Lieut. Albert Erskine Carson Archer (Maurice Farman Biplane, Military School, Farnborough). July 13th, 1915.
- 1439 Herbert Lee Wood (L. and P. Biplane, London and Provincial School, Hendon). July 14th, 1915.
- 1440 Maurice Le Blanc-Smith (Maurice Farman Biplane, Military School, Brooklands). July 14th, 1915.
- 1441 Gilbert de Lacy Wooldridge (Maurice Farman Biplane, Military School, Brooklands). July 14th, 1915.
- 1442 Lieut. Alan Howard Jackson (Sherwood Foresters) (Maurice Farman Biplane, Military School, Birmingham). July 16th, 1915.
- 1443 Flight Sub.-Lieut. James Alfred Goodwin, R.N.A.S. (Caudron Biplane, Royal Naval Air Station, Eastchurch). July 16th, 1915.
- 1444 Flight Sub.-Lieut. William Bernhard Threlfall, R.N.A.S. (Caudron Biplane, Royal Naval Air Station, Eastchurch). July 16th, 1915.

THE FLYING SERVICES FUND administered by THE ROYAL AERO CLUB.

THE Flying Services Fund has been instituted by the Royal Aero Club for the benefit of officers and men of the Royal Naval Air Service and the Royal Flying Corps who are incapacitated on active service, and for the widows and dependants of those who are killed.

The Fund is intended for the benefit of all ranks, but especially for petty officers, non-commissioned officers and men.

Forms of application for assistance can be obtained from the Royal Aero Club, 166, Piccadilly, London, W.

Subscriptions.

	£	s.	d.		£	s.	d.
Total subscriptions received to July 14th, 1915...	9,305	11	5	Miss H. I. Wheeler...	0	5	0
Hewlett and Blondeau, Ltd., and Employes (Third contribution)	6	5	0	F. G. Freeman ...	50	0	0
F. H. Shaw ...	0	5	0	Employes of A.V. Roe and Co., Ltd., for four weeks ending June 25th, 1915 ...	30	3	6
Lieut.-Col. P. G. Huggins ...	1	1	0	Total, July 21st, 1915 ...	9,393	10	11

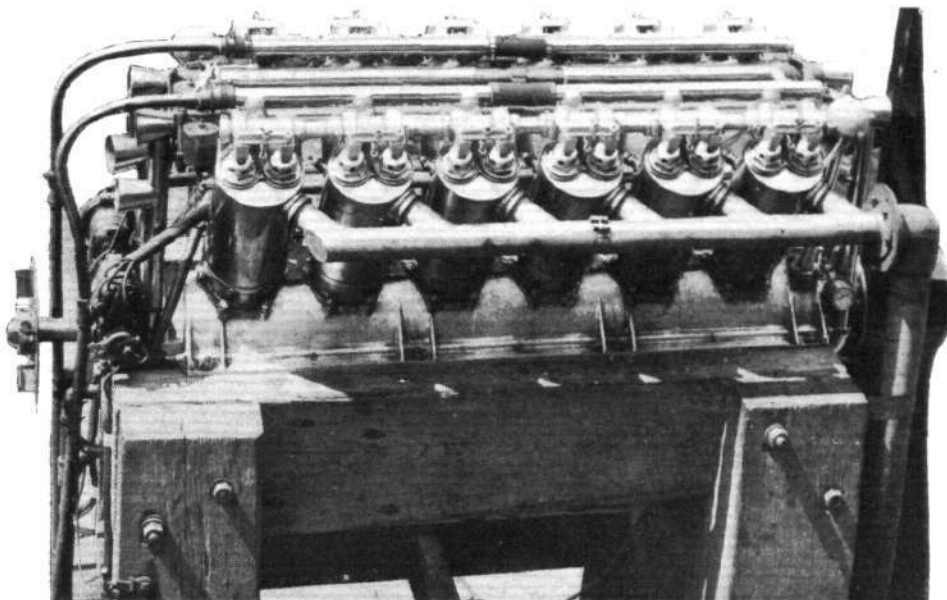
166, Piccadilly, W. B. STEVENSON, Assistant Secretary.

THE GREEN ENGINE COMPANY'S 300 H.P. AERO ENGINE.

LEAVING out of consideration certain hysterical reports of super-aeroplanes with goodness knows what power plant which are cropping out in various directions in the lay press, it will have been clear to those who have followed recent developments in ever so small a way that the necessity has arisen for more powerful engines, especially for seaplanes.

Just as the fast smaller craft are a necessary adjunct to the super-Dreadnought in our Navy, so the fast aerial scout will remain necessary to our aerial fleet. But the want of larger, even if slightly

The valves are of the overhead type, seating in detachable cages, and enclosed by a dome through which the valve is actuated by the end of a short tappet from the two overhead camshafts. Again following their usual method, each seven-bearing camshaft is carried in a small oil-tight horizontal casing, but, whereas in former engines this has been divided into halves, in this engine it is divided into six, forming a separate cam-case for each pair of cams, and carrying sufficient lubricant for a thirty hours' run. By this method each pair of cams may be quickly and easily examined without dis-



Looking down on the 300 h.p. Green engine, showing the arrangement of the water jacket connections, and the disposition of the two magnetos at the left-hand side.

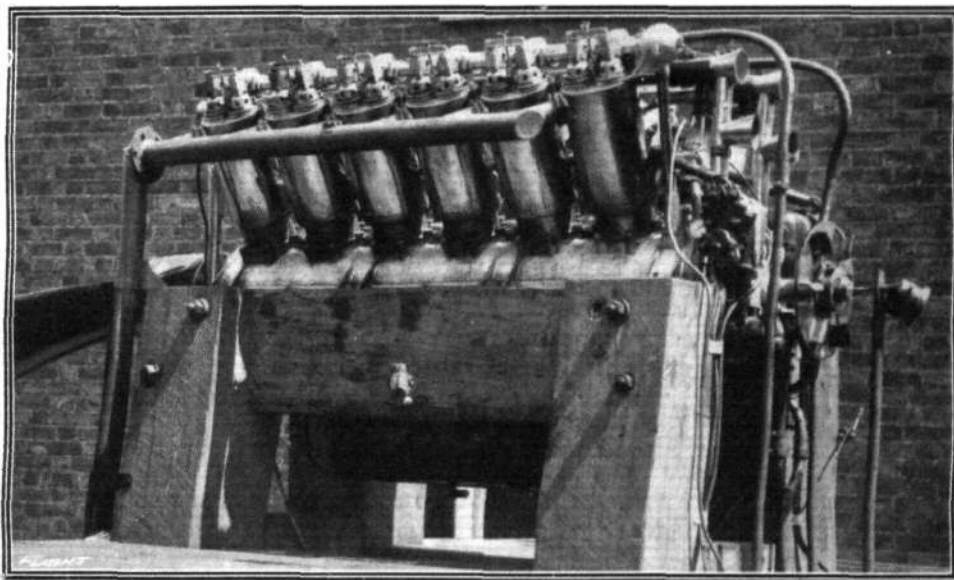
slower, machines for marine work is becoming every day more insistent.

In designing their 300 h.p. engine the Green Co. undertook, and in building brought to a successful and satisfactory issue, the production of what we believe to be the most powerful aero engine ever made.

The engine is of twelve cylinders arranged in the form of a V, and in spite of the substantial appearance as conveyed by our photo-

mantling the casing or disturbing neighbouring compartments. The camshafts are operated by two approximately vertical shafts, one to each camshaft, situated at opposite ends of the unit. They are driven from the camshaft by worm gearing, and drive the camshafts through bevels enclosed in oil-tight spherical casing. Depressors are fitted to the exhaust valves, and they are operated by a rod so that the valves can be lifted by the pilot when the machine is in the air. The crankshaft is supported in seven white-metal bearings, it

The 300 h.p. Green engine on its testing bench.



graphs, weighs but 900 lbs. Following the usual practice of the Green Co., the twelve cylinders are of cast steel, machined inside and out, and are separately mounted, each being secured to the crank-chamber by six bolts. As in previous engines by this company, the water jackets are of thin copper, the joint with the cylinders at the lower end being by a rubber ring fitting in a groove, this method of construction giving a flexible joint, allowing for the unequal expansions of jacket and cylinder.

has six crankthrows, and pistons of the opposing cylinders act on a common crankpin through two big ends mounted side by side.

For induction purposes the cylinders are divided into sets of three, each set being supplied with mixture by a Zenith carburettor situated high up at each of the four corners, and immediately adjoining its own set of cylinders, the control of the four being interconnected to one hand lever.

Two Bosch high tension magnetos supply the current to the twelve

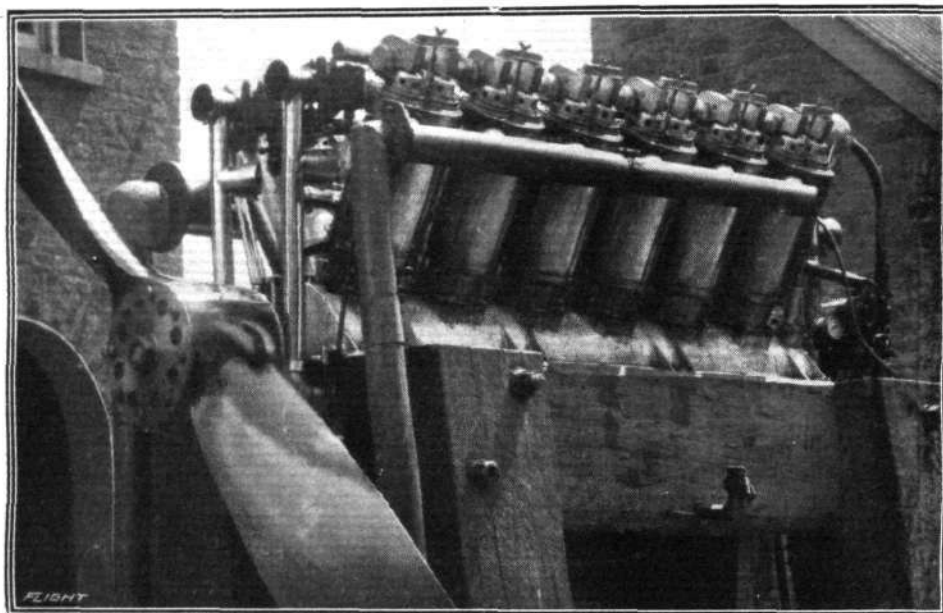
plugs, which pass through the water jacket on the inside of the V in a very accessible position. Ignition may be hand timed, but is so set as to give the maximum speed of the engine when the timing lever is as fully advanced as possible; for starting, however, it is advisable to retard slightly, which does not seem to affect the remarkable ease with which this is accomplished. On the test bench, starting is never done by swinging the propeller, a temporary starting handle having been fixed at the rear end of the crankshaft. As may be seen in the photograph, this consists of an end plate carrying a boss, into which six shallow cup shaped holes have been drilled, to take the rounded end of a short lever. The plate has six pieces cut and lifted to form grooves into which the side of the lever is introduced. It will be obvious that with this device it is impossible to obtain more than a quarter revolution of the crankshaft, yet this is always sufficient, the lever slipping out the moment the engine fires. Backfiring is unknown, but should it occur the arrangement forces the starting lever out similarly.

sump in the base chamber, but from each end is a return pipe to a separate oil tank about midway below the casing. The return pipes are given a steep angle of descent to provide a good flow to the returning oil whether the machine is climbing or diving. When climbing it will of course return *via* the after pipe, and in diving by that in front.

There are two pump circulations for both oil and water, and the engine will run on both or one. A novel feature is that the whole of the operating gear, magnetos, pumps, &c., are mounted as one unit, as is also, at the other end, the propeller boss, thrust ball race, and fixings, so that the engine may be used as either tractor or pusher by simply reversing these parts, which can be done by a mechanic in a very short space of time, leaving the direction of the exhaust pipes unchanged. It is not even necessary to unseat the magnetos, the unscrewing of a few bolts allowing the entire gear to be removed bodily.

The small funnels seen in the photograph, four at each end, fitted

Three-quarter view of the 300 h.p. Green engine from the propeller end.



Some little difference will be noticed by those familiar with Green engines in the design of the cooling system; in this case, instead of the water leaving the jackets at a point near the top, it now issues at the extreme top, being conveyed back to the radiator by means of a duct forming one with the bracket of the camshaft casing, as may be seen in the photograph showing the engine slightly from above. This method not only promotes a more free and natural circulation, but it provides the possibility of making the return pipe and its connections a very neat job, which has been fully taken advantage of in the present instance. Also it obviates the necessity of having the plugs partly covered by the manifold, with the resultant accessibility.

Lubrication is forced, a pump delivering the oil to all internal parts under an unusually low pressure of five pounds. There is no

to the vertical piping, form an elaboration of the usual Green method of ventilating the crankchamber, and keeping it clear of foul gases. In previous models the breathers consisted of short pipes with cowls attached, issuing from the side of the chamber, and being allowed to discharge into the open air. In this model the funnels are reversible with regard to the direction of flight, and serve when the machine is in flight, not only to provide forced draught to the crankchamber amounting to almost a small gale, but the air is then filtered, and carried up to provide a certain amount of forced induction, it being remembered that this latter function is performed in sets of three.

With a bore of 142 mm. and a stroke of 172 mm., using a propeller designed to give the required efficiency, the revs. are 1,200 to 13,000, yet it will tick merrily over at 200 without the slightest sign of hesitation in the rhythm of impulses.

"Aero Engines."

ALTHOUGH there are a good number of excellent books and treatises dealing with the petrol engine generally, very little attention has been given to the subject of the special engines which have been developed for aviation work. Mr. G. A. Burls has, however, stepped into the breach and written a book which should be welcomed by all who have to do with aviation. It is probably unnecessary to remind our readers that Mr. Burls thoroughly knows his subject, for not only is he an authority on the internal combustion engine, but he has given special attention to motors for aerial use and has lectured on the subject at King's College, the Northampton Polytechnic and elsewhere. In fact, some of these lectures form the basis of the book, although, of course, the matter has been re-arranged and largely extended. The opening chapters deal with the theory of internal combustion engines, the need for lightness in aero engines and other abstract considerations of that nature,

while in the subsequent chapters typical examples of modern engines are described, being arranged for that purpose in five groups—horizontal, radial, vertical, diagonal, and rotary. These descriptions are well illustrated by photographs and sectional drawings, many of the latter being to a large scale, so that the details can be readily followed.

Mr. Burls has wisely only dealt at length with those engines which have "made good," and so has been able to treat these thoroughly and yet keep the book within practical limits both as regards size and price. At the same time he has not entirely neglected the many highly ingenious motors which have appeared—and disappeared—from time to time. The book, which is strongly bound in blue cloth and is published by Messrs. Charles Griffin and Co., is one which should be given a place on every aviator's bookshelf. Its price is 8s. 6d. and can be obtained from *Flight* Office, 44, St. Martin's Lane, for 8s. 10d. post free.

EDDIES.

It is most extraordinary how different pilots will have entirely different opinions of the same machine. Take for instance that much discussed and frequently abused 'bus the B.E. 2c. I have talked to pilots who solemnly declare that one can take it up to 500 ft. and cuddle up in a corner of the *fuselage* with a good book and stay there until the hero has, after killing the villain, happily married the heroine, and unless one has flown into another machine the pilot of which was similarly occupied, the good old B.E. 2c will have busied around on an even keel in various graceful figures and still be at the same altitude where she was at the start.

On the other hand, I have had pilots tell me of their struggles on the first attempt on one of these machines. One aviator related how after a short flight he came to the conclusion that the B.E. 2c was hopelessly wrong in design, and that the part of the *fuselage* which is usually at the top ought to have been one of the sides, since the machine seemed to prefer flying with its wings vertical. After getting tired of sitting on the left hand side of the body and watching her plodding steadily along without apparently side-slipping, he thought he would like to sit in the seat for a change, but the moment he had got on an even keel she flopped over on her right and stayed there. I should imagine that the last-mentioned pilot had been used to a highly sensitive machine which responded readily to the least touch, and that he found himself very much in the same predicament as a man does who has been used to riding a bicycle and is suddenly put on a tricycle. I am not likely to forget my own first experience of the extra wheel. The day was Sunday, the hour was 4 in the afternoon, and the place was a promenade running along a canal and a favourite meeting-place for the good folk of the town. When my friend, the proud possessor of the trike, voiced his doubts of my ability to ride the unruly mount, I laughed at him. Of course, so would you if you had never had a try. However, the road was cambered, and wild horses could not have prevented me from turning the front wheel towards the lower side. The result? Oh, a wet suit, a buckled wheel and an angry, but withal mirthful friend.

x x x

The Austrian aeroplane industry was, as we have pointed out in *Flight*, not in a particularly flourishing state at the outbreak of war, and in order to help it along several German firms were persuaded to start branch factories in Austria. During the first part of the war practically all the machines in use on the eastern front were of German manufacture, but as time went on the Austrian factories got going, and are now turning out a considerable number of machines. Among the firms who started factories over there may be mentioned the Albatros and the L.V.G., and to these must now be added another, for I learn that the German Kondor Aircraft Works have just founded branch works at Esslingen. The new firm, which works exclusively with Austrian capital, is to have as general directors Herrn Leisser and Petrovits, whilst the technical director is to be an Austrian engineer, Paul Hermuth. The works will be planned and fitted up in the most up-to-date manner, and it is expected that the first machines will be turned out before the summer is over.

x x x

It would seem that French-sounding names are not in vogue in Germany at present, several having been altered

recently. Among those firms who have changed their titles may be mentioned the Jeannin Aircraft Works, the director of which is Hans Heinrich. This firm will in the future be known, in our vernacular, as the National Aircraft Works, Ltd.

x x x

In regard to the French air raid on Ludwigshafen the following report from a German paper is of interest: "From Strassburg it is reported that of the 18 French aeroplanes which carried out a raid on Ludwigshafen on May 27th, only twelve returned. In addition to the armoured aeroplane that came down to the east of Neustadt, two other machines were hit and brought down. One of these landed at Oetigheim, near Rastatt, in a clear field. In landing it was turned over, and both occupants were so severely injured that they were unable to set fire to the machine, which, with a number of valuable documents, fell into the hands of the Germans. Both aviators were taken to Rastatt in a motor ambulance. It was found that not only were they injured by the smash, but also wounded by rifle bullets. The third machine was so severely damaged by gun fire that it could not be got to climb, and finally dropped at Mutterstadt, near Ludwigshafen. When some agricultural labourers working in a nearby field got to the machine both aviators were dead. Their bodies were later taken to Ludwigshafen by German soldiers. No official information is vouchsafed regarding the remaining three machines, but it is thought that they were forced to land in the Pfälzer woods, thereby sealing their fate."

x x x

The death of Georg Châtel, founder and director of the Automobil und Aviatik Co., of Mulhouse, which, as recorded in "Eddies" some time ago, was caused by a stray shell hitting his villa during the early part of the war, caused a lot of speculation as to the future fate of the firm. It is now stated in a German aeronautical journal that the two Mulhouse merchants, Ferdinand Vogtenberger and Capt. in the Reserve Alfred Linke, have been chosen as directors. As before, the well-known pilot, Victor Stoeffler, will continue to have the supervision of the technical part.

x x x

Whether the imitation Morane monoplanes built by the Fokker Aviation Co. of Johannisthal, Berlin, were found to be inferior to the originals encountered by German military pilots, or whether the German authorities are discarding monoplanes, it is difficult to say, but it is a little surprising to find that, following the publication of a photograph showing a row of 15 of these machines (published in *Flight* last week) ready for delivery to the German War Office, the Fokker Co. is in liquidation, and one would have thought that the Government would have kept the firm alive by giving it machines to build under licence, even if their own "original" machines were a failure. If my memory serves me right, Fokker himself is of Dutch nationality, so perhaps that may help to explain why he has gone.

x x x

Aviating under difficulties is an experience that most of the pioneers who have introduced the aeroplane to out-of-the-way places may well have cause to remember, as I have no doubt such men as Mr. Delfosse Badgery and A. W. Jones would bear me out were they within speaking distance. It seems, however, that the success

which has been the reward of these two pilots has encouraged others to face the difficulties, financial as well as geographical, of getting an aviation industry going in Australia. This emerges from a letter from a correspondent in Western Australia, in which he advises us that a new machine has just been completed by a small syndicate at Kalgoorlie. Few details are available yet beyond the fact that the machine is a tractor biplane with a span of—upper plane 34 ft., lower plane 30 ft., area 380 sq. ft., and a speed of about 50 m.p.h. The engine is a 50 h.p. Gnome. With the exception of the motor and the wire strainers every part of the machine has been locally made, and hence the claim of the constructors that this is the first aeroplane built in Australia by Australians and of Australian material.

The pilot of this new Australian machine is Mr. A. E. Geere, who will be remembered by many readers from his stay at Brooklands, where he took his "ticket" on a Vickers monoplane in, I think, September, 1912. After leaving the Vickers school Mr. Geere joined the Avro school at Shoreham in June, 1913, where he was manager and instructor until the school broke up.

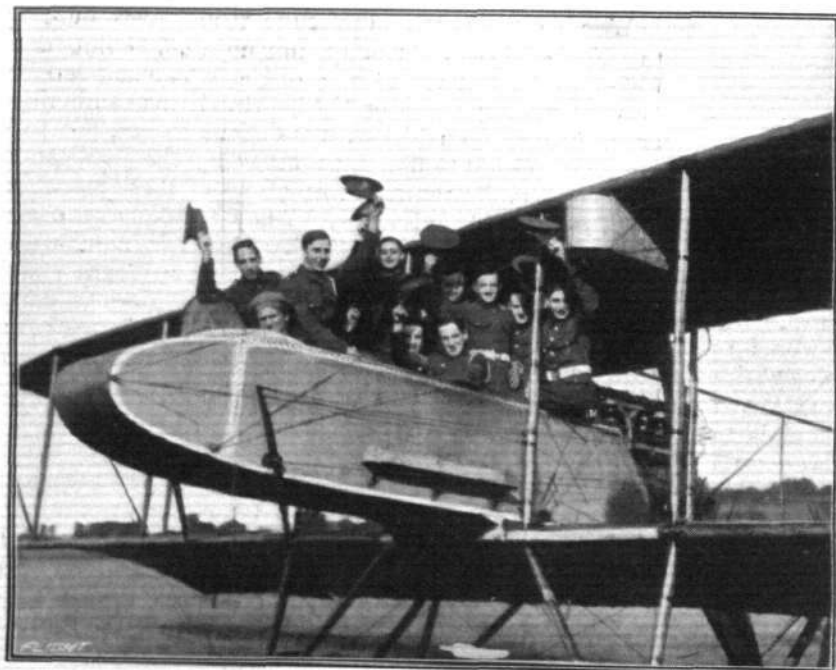
The first flight of the new machine was from a point three miles east of Coolgardie to Kalgoorlie, where a landing was made in Bayley Street. A few days later, on June 10th to be exact, Mr. Geere attempted another trip from Coolgardie to Kalgoorlie. He had covered a distance of about eight miles when his engine began to show symptoms of lung trouble, which gradually grew worse until it coughed itself to a standstill. It was then that the first serious trouble began, for the ground below being not exactly like a billiard table, a forced landing had to be made at the first available spot, which proved to be a scrubby patch on which a flying squirrel might have made a successful landing, but not an aeroplane. However, everything considered, Mr. Geere was pretty lucky as the only damage done was a broken wing tip. A lorry was obtained on which the machine was loaded for transport back to Coolgardie, but whether it was because the horses saw a rival in the new-fangled thing on the lorry or simply from pure "cussedness," they bolted into the bush and banged the machine against the trees with such thoroughness that pretty bad damage accrued to the

framework, putting it out of commission for some time. In no way disheartened, however, repairs are already well forward, and presently it is intended to make a flight from Coolgardie to Perth. Provided this is successful, it is on the cards it may help a long way towards selling one or more of the machines to the Commonwealth. One hopes that the initial hard luck will not pursue the machine in the future, and that the enthusiasts who built it may find the financial backing that will enable them to continue their good work.

Strolling along in the enclosures up at Hendon the other day thoroughly enjoying the flying and various other "exhibits," I unexpectedly chanced upon an old acquaintance whom I had imagined to be miles away somewhere in —. However, there was not the slightest doubt about it, the hearty handshake and the familiar smiling face both belonged to Flight Sub-Lieut. J. Rose, erstwhile one of the valuable instructors at the Hall school. Later on, over "the cup that cheers, but, &c.," I learned that Rose had been having some quite exciting experiences, although from the modest and unassuming way in which he let them drop out one hardly realised that he was not relating everyday occurrences that might have happened to everyone. Notwithstanding his many little awkward happenings, he is in the very pink of condition and apparently enjoying himself immensely, which is good hearing to convey to his friends, who are many.

Mr. J. L. Hall came in for a good deal of "ragging" the other day when he turned up at the aerodrome in a—well, I won't mention what car, but it was one of those which, rightly or wrongly, everyone is supposed to possess. Hall drove the thing with such an appearance of ownership that he really succeeded in giving the impression that he had bought it, and as a consequence he was the object of much sympathy from a number of friends, who, one and all, gave him a hearty cheer when, after a somewhat fierce struggle, he managed to get into reverse under loud protestations from a mulishly obstinate gear-box. However, having demonstrated that he has a fund of real resource, I hear that Hall has now gone back to his ever-ready and reliable Sheff. Simp., which has had a short spell for overhauling and is now going, if possible, better than ever.

"ÆOLUS."



"Flight" Copyright.

A contingent of the Queen's Surreys, at Hendon, testing the holding capacity of the Grahame-White "char-à-bancs." M. Osipenko, the Russian pilot, is in the pilot's seat.

FROM THE BRITISH FLYING GROUNDS.

London Aerodrome, Collindale Avenue, Hendon.

Grahame-White School.—Straights with instructor: Probationary Flight Sub-Lieuts. Barrington, Blake, Clifford, Dallas, Douglas, Hodges, Hume, James, Minifie, Murray, Penley, Pennington, Perham, Roach-Pierson, Sievking and Wyllie. Straights alone: Probationary



Copyright, F. N. Birkett, from the F.N.B. series of aviators.
Flight Sub-Lieutenant D. J. Sheehan, R.N.A.S., who has recently taken his ticket at the Chingford R.N. Air Station.

Flight Sub-Lieuts. Murray and Wyllie. Instructors during week: Messrs. Manton, Russell and Winter.

Beatty School.—The following pupils were out last week, accompanied by the instructors, on Beatty-Wright machines: Messrs. Arbon (8 mins.), Banks (15), Bond (15), Boyle (9), Crossman (8), Delves (18), Eaton (15), FitzHerbert (10), Jones (30), King (10), Ross (11), Sampson (15), Theo (10), Tomlinson (110), Vickers (10), Savile-Onley (8), Dickenson (15). The following were out on a Caudron machine: Messrs. Arbon (5 mins.), Banks (10), Bond (5), Coates (20), Collett (30), Davison (20), Fawcett (10), Goodfellow (60), Litton (10), Nicholson (28), Rutherford (32), Sampson (35), Smith (10), Spicer (20), Thompson (30), Tolhurst (43), Whincup (8), Willmet (20), Dickenson (10), Stagg (28). The instructors were: Messrs. G. W. Beatty, W. Roche-Kelly, C. B. Prodder, and A. E. Mitchell, the machines in use being Beatty-Wright dual-control and single-seater propeller biplanes and Caudron tractors. Exhibition flights were given on Sunday, and twelve passenger flights were taken in the course of the week.

London and Provincial Aviation Co.—Weather fair last week until Friday, which was very wet and windy. Pupils doing rolling: Messrs. Sargood, Frost, Burton, May and Welsford. Pupils doing straights: Everidge, Gunner, Sykes, Scott, Jacques, Moynihan, Blackburne-Maze, Conner. Circuits and eights: Wood and Adams. Instructors: Messrs. Warren and James.

Mr. Herbert L. Wood passed for his certificate on Wednesday, making a steady flight with remarkably good landings. Mr. E. L. G. Dower, who recently took his *brevet* has obtained a commission in the R.F.C.

Vacancies for Examiners and Viewers at South Farnborough.

THERE are now vacancies for examiners and viewers in the Aeronautical Inspection Department, South Farnborough. The total pay and allowances of examiners varies between £3 14s. and £4 4s. per week, and of viewers between 38s. and 48s. per week. Candidates for examinerships should be gentlemen having a good

Ruffy - Baumann School.—Last week was an exceptionally good one from all points of view, many pupils taking active part in the constructional department, as well as receiving considerable flying practice. The following pupils are all making rapid progress, especially Lieut. Dixon, who recently returned wounded from the front: Crawford (20 mins.), Dixon (34), Perrins (10), Fitzsimons (10), Fenning (19), Boisson (22), Railton (20), Gardner (20), Sykes (8), Darwin (7), Liddell (28), Hudson (9), May (10), Wallis (54), Mathewson (30), Ball (8). Instructors: Edward Baumann, Felix Ruffy, Gino Virgilio, Clarence Winchester.

Machines: 60 h.p. R.-B. biplane (tractor), 50 h.p. R.-B. biplane (tractor), 50 h.p. Caudron-type biplane.

Northern Aircraft Co., Ltd.

The Seaplane School, Windermere.—Flying on Tuesday, Friday and Sunday last week. Much wind and wet during week. With instructor: Miss C. Rowland (24 mins.), Barber (17), Betts (14), Benson (15), A. J. Inglis (16), Laidler (31), Lawton (11), Macaskie (23), Macintyre (12), Part (14), Reid (13), Robinson (33), Ridgeway (22), Slingsby (8), Yates (38), and Robertson. Instructors: W. Rowland Ding and J. Lankester Parker.



2nd Lieut. A. D. de Broughton (on the right) and Instructor Virgilio, who trained him at the Ruffy-Baumann School for his certificate which he secured recently.

On Sunday S. J. Sibley completed first half of ticket, making exceptionally good landings, but wind stopped flying for the rest of the day.

Messrs. Ding and Parker out testing on several occasions.

theoretical and practical training in engineering and a knowledge of micrometer measuring instruments. Preference, we understand, will be given to gentlemen who are unfitted for military service. These appointments provide patriotic men, having the necessary qualifications, with an unequalled opportunity to serve their country. Application should be made to the Chief Inspector, Aeronautical Inspection Department, South Farnborough.

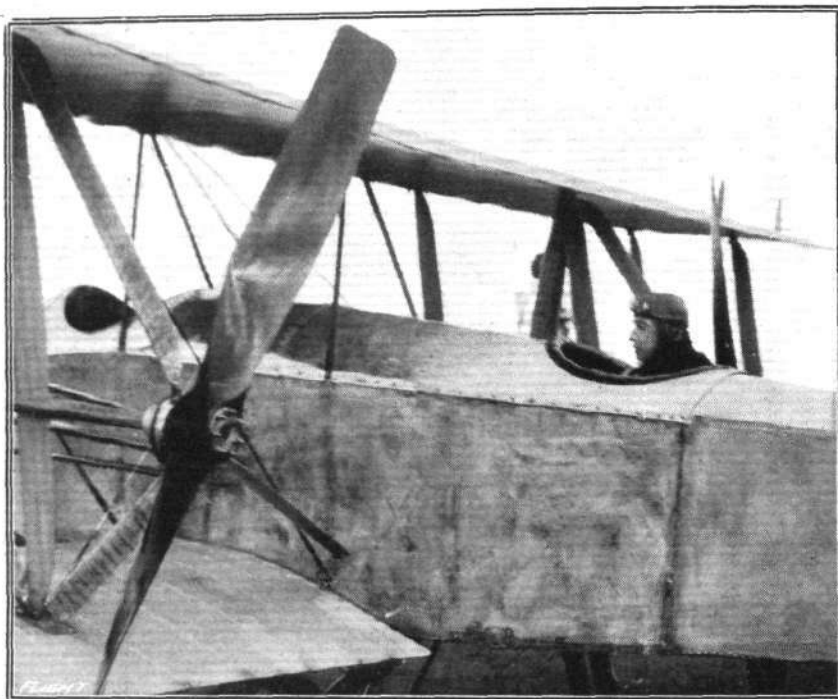
FLYING AT HENDON.

FLYING was rendered impossible last Saturday owing to the high wind and downpour of rain. On Sunday, however, there was quite a lot of work going on, although early in the afternoon the condition of the weather was not ideal for flying. J. S. B. Winter, on a 50 h.p. G.-W. school 'bus, and W. Roche-Kelly, on a 50 h.p. Beatty-Wright biplane, were the first out. The last-named pilot took the air again shortly after, Marcus D. Manton with a passenger on the 50 h.p. G.-W. 'bus and E.

and Winter made a flight with a passenger on a new 50 h.p. G.-W. bi-rudder school 'bus. C. B. Prodger then joined the ranks of those already at work, on the Beatty-Wright biplane fitted with the new 60 h.p. Beatty engine, which appears to be, as one of the aerodrome natives put it, "thumbs up." In the meanwhile Osipenko was taking up passengers and setting them down again on the five-seater as fast as he could. Virgilio, Roche-Kelly and Prodger also put up further

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Mr. Rowland Ding in the pilot's seat of the Mann biplane, stowing the strengthened bracing of the propeller shaft.



Baumann on the 60 h.p. Ruffy-Baumann biplane going aloft at the same time. A little later on M. Osipenko took up two passengers on the 100 h.p. G.-W. five-seater 'bus, whilst Winter and Roche-Kelly each had a passenger on the 50 h.p. G.-W. and the 50 h.p. Beatty-Wright respectively. Then followed two more flights with passengers by Osipenko on the five-seater, and a flight each by Roche-Kelly on the Beatty-Wright, Manton and Winter on G.-W. 'buses. G. Virgilio next ascended on the new 50 h.p. Ruffy-Baumann biplane,

flights on the Ruffy-Baumann and Beatty-Wright biplanes respectively, and yet another pilot, J. L. Hall, came out and made one of his usual picturesque high flights, terminating with a spiral descent, on his 45 h.p. Caudron. Later he made a couple of trips on his 50 h.p. *fuselage* Caudron-type biplane. The various schools then started work, and although it was late evening, there were still many spectators present. Apparently visitors to Hendon have realised that school work is just as interesting to watch as exhibition flying—and certainly, at times, more exciting!

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"The Aeroplane."

THIS volume, which, like Mr. Burls' book on "Aero Engines," is published in Griffin's aeronautical series, is described by its author, Mr. A. Fage, as a concise scientific study written to meet the requirements of those who are desirous of an introduction to the study of aeronautics. As such it can be warmly commended to all who want to know why and how an aeroplane flies. Mr. Fage, who is an assistant at the National Physical Laboratory, has drawn upon the reports of the various aeronautical laboratories and has done a real service in presenting some of the more abstruse technical memoranda contained in Advisory Committee for Aeronautics Blue Books in such a way that they can be readily understood by others than those who are specialists in mathematics. As far as possible no controversial matter is discussed, and sketches and descriptions of aeroplane construction, which are of

minor importance compared with a full understanding of the underlying principles of aeronautics, have only been introduced briefly. It may be useful to give a short *resumé* of the contents of the book. In the opening chapter winds and the effect of the atmosphere on moving bodies and surfaces are dealt with, and in the next chapter streamline bodies and struts are considered. Chapter three is devoted to the aerodynamics and construction of aeroplane wings, while in the succeeding chapter the general arrangement of aeroplanes is reviewed, with short descriptions of well-known types. In the next two chapters the problems of the equilibrium and stability of aeroplanes are discussed, leading on to a consideration of the aerial propeller. The concluding chapter is devoted to a brief review of theory and practice in aero motors. The price of the book is 6s.; it can be supplied from *Flight* Office for 6s. 4d., post free.

AIRCRAFT AND PARLIAMENT.

ON Tuesday night aircraft loomed large in the proceedings of Parliament, the question of supply and equipment of our Flying Services arising out of questions by members during the Supplementary Vote of Credit for war purposes. Below we give a full report of the speeches and references to aircraft by the several members of the House who took part in the debate:—

Mr. Joynson-Hicks was the first to raise the question, and said: I desire to make a few remarks on a subject in which I have been immensely interested for some years, and that is the way in which the aerial operations of the War have been conducted. I shall be careful in my remarks not to indulge in criticism of that character which was deprecated a few days ago. I do not propose to indulge in destructive criticism, and I do not propose to indulge in instructive criticism, but if I can suggest some constructive criticism to the representatives of the Navy and the Army I shall feel that I have not spoken in vain. My justification for speaking this afternoon is a speech made by the Minister of Munitions a month ago, that is on June 14th, only two days before I spoke in this House on this subject and only two days before the Under-Secretary of State for War gave us rather a glowing picture of our Air Service at the front. The Minister of Munitions, speaking, I think, at Bristol, said:—

"We want more aeroplanes. The Germans have many more than we have."

I said nothing quite as strong as that. The right hon. gentleman went on to say:—

"One British aviator goes as far as two or three Germans, but we want more machines. The more you can turn out, the better it will be for our brave fellows in France."

The Field-Marshal Commanding-in-Chief said:—

"The Air Corps has become more and more an indispensable factor in combined operations."

The object of my speech this afternoon is to plead for more aeroplanes, for more pilots, and incidentally for a larger type of aeroplane. The Air Service has, I admit, developed during the War, but the point I want to make is that it has developed along the old lines. It has developed along the lines of a year ago; it has not struck out, because I imagine there has not been, possibly, a man of sufficient imagination to seize upon the possibilities of the occasion, to examine the best brains in the Air Service, both of the Navy and the Army, to seize upon what might be dreams, and have them translated into action on the battlefields in Flanders or in the Navy. From the reconnaissance point of view our Air Service is perfect. It is not necessary for me to say that the men are perfect; that is admitted on all hands. There are no aviators in the whole world, even those of France, who are better than our aviators. France, of course, is the leading aviation country, but to-day I think France would feel glad at being compared with us. There can be no greater honour to our own airmen than to say they are as good as those of France and far better than those of Germany. Artillery warfare is practically impossible to-day without aeroplanes. All ranging is done by means of aeroplanes. I have had an opportunity, as no doubt other hon. members have had, of speaking with officers both of the Artillery and of the Infantry and of the Air Service who have come back from the front, and it is generally admitted that in artillery warfare, good ranging is entirely the result of efficient aeroplane service. It is impossible for us to locate the German trenches with sufficient accuracy without our Air Service, and it is equally impossible for the German artillery to perform the remarkable feats which we know they have performed unless they have a sufficiency of aeroplanes to identify the exact spots in our lines where our trenches are. Almost everyone who comes back from the front says that invariably the presence of German aeroplanes hovering over our trenches is followed by a burst of high explosive shells with a nicety of range which was absolutely impossible to the Artillery service three or four years ago. It is quite true, as the Field-Marshal Commanding-in-Chief said in his last report:—

"During the last two months there have been sixty air battles between individuals, in which our airmen have been universally victorious."

I think he said that we have not lost a single man in these sixty air battles. I am quite prepared to agree as to the superiority of our airmen. One knows that there have been individual contests, and one realises that owing to the superiority of the English flying men rather than the superiority of our aeroplanes we have come off victorious. But we have not by any means kept the German aeroplanes off our lines. If we had done that we should have kept back the German Artillery from shelling our lines as they have done. I am prepared, on the authority of Artillery officers to go so far as

to say that to-day the German Artillery, so far as shelling new positions is concerned—of course they have the range already on existing trenches—would be blind if we could completely chase the German aeroplanes off the field. Cavalry has also been superseded from the point of view of reconnaissance by aeroplanes. One knows that the absolutely essential condition of modern warfare, indeed the essential condition of all warfare from the time of the Duke of Wellington down to the present time, is that we should know what the fellow is doing on the other side of the hill. When we realise to-day that any general, English or German, can with motor traction, say, with a couple of hundred motor omnibuses or a corresponding number of motor lorries, move in one night some thirty thousand or forty thousand troops a distance of thirty or forty miles, we see that it is absolutely essential that our Air Service should be so perfect that it could prevent the concentration of the German troops in any given area during a night like that, first, by an offensive attack while they are being concentrated in a given position, and also by giving our own generals accurate knowledge of where those troops are to be concentrated.

While I am speaking of the reconnaissance side of the aeroplane work I should like to plead with the Under-Secretary of State for War that some recognition should be given to the work done by the observer. The aeroplane observer to-day is almost as important, if not quite as important, as the pilot. He must be a trained soldier, sitting side by side or in front of the pilot of the aeroplane, who can distinguish unit from unit, can discover the batteries of the enemy, carefully hidden as they always are, and can make his report in a concise and military manner to the general as soon as he gets back. There is, I know, a feeling among the observers, who are, I think, about the same number as the pilots, that they might have the badge which is given to these, or a similar badge, to show that they have been risking their lives in the same way as the pilots, and have been performing services to the Army as great as the pilots. What I want to find out is whether during this year of war there has been such an improvement in the Air Service as will show that there is a possibility, either on the spot in Flanders or in England, of taking hold of the matter and developing it not on the old lines but on new lines. When I spoke a month ago a reply was made by the Under-Secretary of State for War. All he was able to say, and he seemed pleased to be able to say it, was this:—

"The Air Service is in very good proportion indeed to the rest of the Army. What I want the hon. member to realise is that since the outbreak of war there has been no smaller expansion of the Air Service in proportion to the rest of the Army. On the contrary, the expansion of pilots has been in a ratio of ten to one. Where we had one before we have ten now engaged in the Air Service, while the expansion of men generally is in the proportion of five to one."

I am not a hostile critic. Everybody knows that. I want to help the Air Service, but I think that that shows that the right hon. gentleman has only got a conception of the possibilities of the Air Service such as we always had twelve months ago. He comes down to the House and says that the hon. member for Brentford ought to be satisfied because he showed an increase in the Air Service of ten to one. But during the last twelve months we have increased our forces at the front—in Flanders, and certainly if we include our forces in the Dardanelles—by ten to one, and all that the right hon. gentleman is able to assure the House is that we have increased our Air Service in proportion, and only in proportion, to the increase of our troops at the front.

Those of us who have realised two or three years ago the possibilities of what could be done by an air service think that instead of being pleased that we had increased our Air Service by ten to one, the right hon. gentleman should have been able to come down to the House and say that our Air Service to-day is entirely different from any conception which we had on the matter twelve months ago. But there has been no real development in the Air Service and in the possibilities of what the Air Service can do. They are going on doing what they were doing twelve months ago. They are doing it better, I admit, but it is the same kind of work—some reconnaissance work and some intermittent attacks on the enemy. But there has been no real conception of the possibilities of aerial offence out of all proportion to what were considered its possibilities twelve months ago. The right hon. gentleman went on to tell us that the question of pilots depended very largely on the question of schools, and we have, he said, eleven schools to-day instead of one at the time of mobilisation. That is quite true, but I think that I am right in saying that some of those schools which we have to-day really existed before twelve months ago. They were independent schools which were open, and they have now been converted into Government schools. The schools were there turning out pilots, and they are now turning out Government pilots. Those schools

can be extended. I am prepared to say, from conversations which I have had from airmen in high position, that it is possible to make more pilots than we are making at the present time.

The first essential which must be observed to-day is to be careful that those pilots are turned out thoroughly experienced. I do not want to say a word which would give any information to our enemy, but after debates which have taken place in this House on the subject of munitions, and after the exposures which have been made with regard to munitions without doing any harm to our cause—indeed, doing benefit—I think that there is no harm in making one or two statements with regard to the training of our pilots. I have heard, from the front, of a pilot who went over trained after six weeks, and the whole time that that man had been in the air was five hours' flying before he went over to France, and there was rigged out with a machine and provided with an observer to go on the machine with him, whose life was placed at the disposal of this man who had only been five hours altogether in the air. I have heard of another who had been only three months in the school, and eleven hours in the air. That surely must come from a shortage of machines in our schools. What is wanted is that the Government should deal with this matter of machines in the same way as the Minister of Munitions is dealing with the question of munitions, so as to turn them out not in dozens or in hundreds, but, if necessary, in thousands.

Though our men are so good, I am bound to say that our engines have always been the weak place in our Air Service. There has been a great difficulty in getting sufficient engines, and engines which will make our machines powerful enough to rise sufficiently high and sufficiently rapidly to cope with the German machines. Only this week a pilot from the front told me that he had to fly a machine—I will not say the height to which it will go, though I will tell the right hon. gentleman afterwards, if he likes, but he could not get it up as high as those of us who know the possibilities of aeroplanes know that he should be able to get it to go. That machine should have been sent back—it probably has been by now—from the front, to be thoroughly overhauled. Then, apart from the question of pilots, we have not got enough machines for the use of the pilots. By machines I mean good, first-class machines, in every way adequate to enable the pilot to carry out the duties entrusted to him. I know the number of machines that were at Salisbury Plain, on the occasion of the review, some two months before the war began. I will not mention the number to the House, but the right hon. gentleman knows it. But even if we had ten times that number we have not got enough machines at the front. The loss of machines in a war of this kind is bound to be enormous. I do not think I would be far wrong in saying that our Air Service has lost a machine per day, if we include all the machines which have been damaged or broken up in the course of this war. All that has to be provided for. All that wastage has to be made up.

There is a very remarkable sentence, which I would not have quoted if it had not been made public in the Field-Marshal's last despatch. He says:—

"We have been indebted to our Allies for supplying us with aeronautic material without which the efficiency of our Royal Flying Corps would have been seriously impaired."

That means that there was not a sufficient supply of aeronautic material from this country at the front, and if our Allies, the French, had not come to our assistance the efficiency of the Royal Flying Corps would have been seriously impaired. Surely, the Minister of Munitions, or somebody, is required to take that matter in hand. Then there is a lack of fighting machines. It may be that reconnaissance work has been done as magnificently as it is possible to do it, but where calculation has been lacking with regard to the Flying Corps has been in the direction of seeing what could be done with large fighting machines, and in providing our aerial corps with a sufficiency of fighting machines. Zeppelins can only be kept away, as everybody knows, by aeroplanes. They cannot be kept off our shores by anti-aircraft guns or large guns. They fly at a height of 10,000 feet, a height at which no gun can touch them. Of course aeroplanes can get above them. The unfortunate Lieutenant Warneford got above a Zeppelin and put an end to it with a comparatively small bomb of twenty pounds. A bomb containing a few pounds of strong explosive put an end to the Zeppelin. That was done because of the absolute intrepidity, fearlessness and skill of Lieutenant Warneford, and also because he had a machine which could rise rapidly and get above the Zeppelin, whose destruction then ensued. Why is it that there have been no Zeppelin raids here during the last month? Some people have been wondering why? The Chancellor of the Exchequer says, "Tell us why?" I will tell you.

Mr. Jonathan Samuel: Keep your secret.

Mr. Joynson-Hicks: I think that it will do no harm. It is known to the Germans.

Mr. Macpherson: Keep it quiet.

Mr. Joynson-Hicks: It is a reason connected with the efficiency of our Air Service in Flanders.

Mr. Samuel: I am living on the North-East coast. Do not divulge anything that might bring them there.

Mr. Joynson-Hicks: I should be very loath that any injury should result to the hon. Member from any indiscretion of mine. What I am asking, both in the Naval and Army Air Services, is that there should be immediately provided a sufficiency of powerful fighting machines in order that the Zeppelins may never start from the other side of the North Sea. Then, I think, the hon. Member will be perfectly safe on the North-East coast. The Navy has, of course, charge of the safety of our coasts. There is no reason why there should not be an air station at least every forty miles along our Eastern and South-Eastern coasts, with, say, twenty scouts and twenty fighting machines, in order that everything possible may be done for the safety of the hon. Member opposite. He is entitled, and so is every resident on our coasts, to have everything done by the Air Services of our Army and Navy so as to prevent Zeppelins not merely reaching our shore but even starting from the other side. Why cannot we have more fighting machines? We can get them from America, and in saying that I am making no statement which could afford any benefit to the Germans. I have taken the trouble to read the American newspapers on the subject during the last few weeks; I have found full particulars of what the Americans have done in regard to aeroplanes, and I submit, from information I have, that they can do more. They are untrammelled by the ideas of twelve months ago, and we can realise what could be done by a gigantic aeroplane service taking the offensive against the Germans.

I do not want the Minister of Munitions to take the matter up; I do not think it is necessary. I have seen it stated in various newspapers that it is desirable that there should be a Minister of Aviation. I do not think it is necessary. I want to see whether either of the big Departments represented here is responsible for the supply of aeroplanes to the Army and Navy. The hon. Member for Clare tried to find out whether the supply of aeroplanes is under the Minister of Munitions or the Under-Secretary of State for War and the First Lord of the Admiralty. Are they responsible not merely for the supply, but for deciding the number that can possibly be utilised? I submit that as yet there has been no real offensive by aeroplanes such as there might have been in this war. There have been various raids on the Continent by our aeroplane service from time to time; there have been intermittent raids, and the Germans have had ample time after each raid to repair the damage. If there could be continuous raids—which there cannot be, of course, unless we have a greater supply of pilots and aeroplanes than we at present possess—if there were continuous raids, I do not mean sporadic raids, but continuous raids of some four or five hundred aeroplanes dropping bombs on the Rhine bridges and the great Krupp factory at Essen—

Mr. Booth: On a point of Order. I wish to ask you, Sir, whether the hon. Member is right in discussing matters of strategy and whether you consider it wise that the Government should make any reply. If so, what is the position of hon. Members who do not like to hear these questions discussed?

Mr. Speaker: I am afraid that I have no inherent powers to stop these remarks. I hear a great many things said in the House which I think unfortunate, but I regret to say that I have no power to stop those statements. It rests with the Government, or any Member of the Government, to say that these matters had better not be discussed, and, if that be done, I am sure that the hon. Member will not persist in his remarks. The responsibility rests with those who know what should not be discussed.

Mr. Joynson-Hicks: I need hardly say that if the Government say that this is a matter on which there should not be discussion I will not continue, but, in justice to myself, I think the House will realise that I have not made a single statement which has not appeared in the public Press during the last few weeks. I think everything I have said has appeared in the public Press.

The Under-Secretary of State for War (Mr. Tennant): Perhaps I may be allowed to say that there are certain criticisms and suggestions which have been made by the hon. gentleman in the course of the observations which he has addressed to the House, to which I am able to reply, but there are certain other points to which I am certainly unable to reply, from the nature of the case, and the House might be the first to reprobate any answer which it thought ought not to be given. Therefore, I think, the hon. gentleman will be wise if he tried to circumscribe his remarks within the area in which reply is possible.

Mr. Joynson-Hicks: I need hardly say that I will follow the suggestion of the right hon. gentleman; I will not go into details; I do not in any way want to go into details which would afford our enemies the slightest help. But if hon. Members who interrupt have read the newspapers I think they must see that I have said

nothing which has not already been published. The object of my speech is to get the Government to realise the enormous possibilities that there are in our Air Service from a fighting point of view. We realise all that they can do from the reconnaissance point of view. The Air Service—and this is known to the public and therefore can do no harm—aided our ships in the destruction of the "Königsberg." They directed our ships where to fire, and without that assistance our guns would never have hit the "Königsberg." It was by the co-operation of the aeroplanes that the gunners knew exactly the spot to which to direct their fire, which ended in the destruction of the "Königsberg." There was also the naval episode, well known to everybody, namely, the destruction of a transport in Turkish waters by the guns of the "Queen Elizabeth." The right hon. gentleman knows that there is no harm whatever in our knowing that the "Queen Elizabeth" destroyed a Turkish transport at a range of 18,000 yards. That was done by our wonderful modern gunnery without the "Queen Elizabeth" seeing the ship she was aiming at, or the sea upon which that ship rode, and it was due entirely to our Naval Air Service being able to communicate with the "Queen Elizabeth," and show exactly where it was that she was to direct her fire.

Mr. Jonathan Samuel: It seems that the hon. gentleman is really giving important information, or I may put it that the hon. Member is concentrating this information in such a way that he is really risking the lives of aviators in future when they go up for scouting purposes. I think it very unwise to place this information before the House of Commons.

Mr. Joynson-Hicks: I can assure the hon. gentleman that it is not so. There is nobody in this House—and I say it advisedly—who can exceed me in my admiration for our magnificent Air Service, or is more determined to protect it and aid it in every possible way. I speak not merely as an independent Member, but I am convinced that I speak largely on behalf of the Aeroplane Service in asking the Government to give them greater facilities for the work which they believe is in their power. The Air Services, both of the Navy and Army, are convinced that there are possibilities of offensive warfare in the air that were not dreamt of twelve months ago. What I desire is, and what I am sure they desire is, that the Government shall appoint some man of imagination and power and leisure, a business man, who would get hold of the heads of the particular Air Services, and would say to them, "What do you want, not on the lines of present development, but what do you dream of as possible? What do you dream of, in your imagination, as to what the Air Service really can do?" The War, I believe, may go on for some considerable period longer, and there is time to develop our Air Service, time to create more pilots, time for you to complete those large aeroplanes of which we have read in the newspapers, and of which the Under-Secretary of State spoke only a few weeks ago in this House.

I ask the right hon. gentleman representing the Navy, and the right hon. gentleman representing the Army, to take these matters into their consideration. I am not criticising this afternoon, I have not been indulging in criticism, save it be of that constructive character which lies in the development of the Air Service. I believe in the future of our Air Service and in the future of aeroplanes. I believe in the Air Service as an offensive measure against the Germans, and as a means of turning the German flank in Flanders—large and powerful aeroplanes dropping bombs on the Prussians' lines of communication. I believe in the Air Service as the best means we have, in future, of coping with submarines. I ask the House to believe, if they think I have offended in any way, that I am in earnest in this matter. I am convinced that the success of this war can be achieved by a large Air Service developed as an offensive force. I believe that if the Government took this matter in hand, and appointed some business man as the head of the Aeroplane Services, he would accomplish what the Minister of Munitions has done for artillery, and I hope the Government will deal with this Air Service, from the offensive point of view, in a frank and energetic way.

The Prime Minister: With reference to the speech of the hon. Member for Brentford (Mr. Joynson-Hicks) about aviation, I cannot at all agree that because those statements have appeared in newspapers that he, as a Member of Parliament in a responsible position of authority, should think that is sufficient justification for making those statements here. A statement made in this House goes out to the world with a very different amount of authority from anything that occurs in the Press.

Mr. Joynson-Hicks: A great deal of what I said was included in an article written by me for a newspaper and passed by the Censor; therefore I thought I was amply justified in assuming that, as it had passed the Censor, there was no objection to my making the statement here.

The Prime Minister: Then when the hon. gentleman refers to the Press as his authority, he is referring to himself.

Mr. Joynson-Hicks: Again, I think the right hon. gentleman is

hardly fair. I did not refer to the Press as my authority; I merely referred to the fact that statements which had been made by me had appeared in the public Press. I did not say that the Press was an authority; far from it.

The Prime Minister: I will not pursue the point; I will leave it where it stands. I am not complaining in the least of the hon. gentleman. What I say is that, when we make statements here, they are in a very different position from those which under the censorship, such as it is, are allowed to appear in the Press. . . .

One word with regard to the point raised by the hon. member for Brentford (Mr. Joynson-Hicks), who spoke as to our aerial equipment. I am sure the hon. gentleman will not think that I am treating him with disrespect if I say that everything he said as to the supreme importance of this particular branch of our military and naval equipment is not only true—obviously true—but is realised to the fullest extent by the Government and the military and naval authorities. It goes without saying at this stage of the war, and it has gone without saying almost from the beginning, that with regard to the proper use of artillery, with regard to reconnaissance work of all kinds, both upon sea and upon land, the extended scientific use of aeroplanes has become one of the most rudimentary necessities of every army and navy in the world. I have no need to assure the hon. gentleman, I am sure he will realise, that any Government, particularly the Government of this country, would be grossly negligent of its duty if it did not make every effort both to extend the mechanical development of the aeroplane and to secure an adequate supply of well-instructed and well-trained pilots and observers. I can assure him there is no part of our military and naval problems which more constantly engages our attention.

On behalf of those who are responsible for the organisation and development of this magnificent branch of our fighting services than which none has distinguished itself more in the course of the war or realised more satisfactory results, I must say that I think any suggestion that there has been want of imagination in conception, or of readiness in the application and adoption of new inventions and new processes, or lethargy or slackness in the enlistment and training of pilots and skilled observers is totally unfounded, and not in the least in accordance with the facts. I do not believe there is any department either in the Army or the Navy where these qualities of imagination, adaptability, elasticity, and assiduity have been or are being more conspicuously displayed. I do not believe that our service is one whit behind that of any other of the great belligerent Powers. Speaking with knowledge and authority, I say that, at this moment, it is being developed and expanded in every possible way under the best auspices and the wisest guidance.

Mr. Lynch: I wish to say a few words on two topics, aeroplanes and inventions, one of which—that of aeroplanes—has been somewhat exhaustively dealt with by the hon. and learned Member for Brentford. With regard to aeroplanes, I would simply indicate on broad lines what seems to me a possibility. I think this country is very fortunate in regard to the question of war in the air that the German mind is at present hypnotised by the Zeppelin idea. The Germans have been buoyed up with great hope and great faith, perhaps unwarranted, as to the possibilities of the Zeppelin, and, in spite of repeated failures, they have persisted in the work of constructing Zeppelins. If they had been entirely free from that obsession, and if they had devoted their minds and their high, scientific, technical knowledge to the question of building aeroplanes, I think they would have seen possibilities which they would have developed, and which would have finally made their aeroplane service enormously more formidable than the Zeppelins. I believe, therefore, this country has every reason to congratulate itself upon the fact that the German mind has become hypnotised with the idea of Zeppelins. The hon. and learned Member for Brentford (Mr. Joynson-Hicks) has pointed out certain possibilities of the aeroplane for the purpose of reconnoitring and scouting and also as a striking force. It is only necessary to indicate that all the elements of the problem have been separately solved, and all we need do is to combine them in order to assure ourselves that we have the possibility of building a great force which will secure for us the complete dominance of the air, and which would prevent enemy aeroplanes appearing within any area contiguous to our own aeroplane force and that of the Allies, thus securing for us complete mastery of the air. All the main elements of this problem have been separately solved, such as the question of how long aeroplanes can remain in the air, the distance they can traverse, the power, speed, and rising faculties, the bombs they can carry, the machine guns they can carry, and even the wireless services they can man. That all these problems have been solved successfully has been shown in the various sporadic raids which have already been undertaken on the part of our aeroplanes at various points of the western front and on the middle part of the western part of the French lines, as, for instance, in the successful raid on Chauncy.

The difficulty in the way of providing a strong fighting force of

aeroplanes is not the material difficulty of execution; it is not to be found in the difficulty of any single part of the problem. The aeroplanes can be obtained and the pilots can be trained. The question of supplying bombs is already solved, so that the only difficulty that now remains is the psychological difficulty—that is to say, the difficulty of convincing the authorities that here is a question the proper handling of which indicates the true line of safety and ultimately the line of victory—so to seize their minds with that faith or conviction that they will throw themselves with the greatest energy into this problem of building aeroplanes, so that once and for all we may attain the conviction, even before we actually realise it, that this country and its Allies mean to obtain complete dominance of the air.

With regard to the uses which a strong striking force of this kind can be put, I will indicate one, namely, in regard to that most difficult of all questions—the proper means of defence against submarines. I think there are two ways in which aeroplanes can operate so as to greatly limit the danger of submarine attacks. I believe—but I will not give details—that in the development of our aeroplane service lies the possibility of solving that problem, and providing us with an efficacious defence against submarine attacks. Before leaving this particular question I would like to refer to one point made by the hon. and learned Member for Brentford in regard to what he said about a separate Department for aeroplanes, and particularly a Ministry of Aeroplanes. I am inclined to think that this has almost become a necessity, because there is a very great difference in the way in which any particular subject is tackled; if, on the other hand, it is left to a sub-department of a great office, it is not so efficiently dealt with as if it be left to an entirely new department filled with new energy, and possessing great officers of State. They generally have the faculty of magnifying the importance of their own office. That would be a distinct advantage, because once this work is undertaken it ought to be pressed forward with the greatest energy and vigour, so that in the shortest possible space of time this country and its Allies would in this respect be in a position of enormous advantage.

I would like to emphasise the fact that this suggestion points out not only a way to victory, but almost the only way which is now open to us. The great operations on the Western Front have up to the present resulted practically in stalemate, neither party having made any decided advance. Both are locked together, but an enormous and speedy development of our aeroplane service might turn the scale of that balance and secure victory for this country.

I would conclude by drawing this moral, and saying, in the case of aeroplanes especially, the way has been indicated. The principal difficulty is not one of material but is a psychological difficulty, and I hope that there will be a great pressure of public opinion, if nothing else, brought to bear upon the War Office, so that they will be led—I will not say compelled—into this way of taking a leaf from the Germans themselves; and, once having seen that clear way to victory, may they strike into it with the utmost resolution, vigour, and energy, so that within a comparatively short time the Under-Secretary of State for War will be able to announce to this House that the question of the predominance of the air has been solved and that no German aeroplane dare show its nose within a certain area which is under the control of the aeroplanes of the Allies, and that this great arm is not only performing functions of scouting and reconnoitring work of all kind, but that it has also become one of the most powerful and striking arms of the forces of the Allies.

Mr. Tennant: The hon. gentleman who has just sat down suggested that the real difficulty in connection with the supply of aeroplanes for the Government and the Army was a psychological difficulty. I should like to disabuse him of that idea at once. It is wholly unnecessary to bring pressure to bear upon the War Office in order to convince us of the importance of the Air Service. I would like to refer to the remarks which were made by the Prime Minister not many minutes ago, assuring the House that we are not only duly impressed to-day or yesterday, but that we have

Larger Types of Military Aeroplanes.

REPLYING to questions by Mr. Lynch in the House of Commons on Monday, Mr. Tennant, the Under-Secretary for War, said he understood that German aeroplanes had been seen which appeared to be propelled by more than one engine, but that there was no evidence of German aeroplanes carrying guns larger than machine-guns. There was no detailed information regarding the aerial losses of our Allies.

Mr. Lynch asked whether the production of aeroplanes with more than one engine or carrying a gun larger than a machine-gun was advocated by General Henderson, Director-General of Military Aeronautics, and by other persons closely connected with aviation in this country, some months before the war; whether such aeroplanes were in the possession of the Royal Flying Corps on active service before the appearance of the multiple-engine German

been impressed from the outset of this war, with the enormous importance aircraft play, and must play, in all operations of war. Those matters have been considered, as I say, by the best brains in the Army, by the best mechanical brains that we could obtain, for many months past. The responsible authorities have been considering all these questions as to the increase as rapidly as possible of the Air Service. I am sure the hon. Member would not expect me to make an announcement as to what steps have been taken—it would not be proper that I should do so—but a policy has been decided upon, and that policy is being carried out as rapidly as it possibly can be.

I was asked more than a month ago in this House to state some of the steps which were being taken in order to carry out that policy. I then indicated that one of the most important of them—I am sure the hon. Member will agree with me that it is one of the most important—was the increase of the number of training schools for pilots. Of course, we cannot have an indefinite increase in the number of those schools without a very large increase in the machines with which to teach the pilots. The hon. Member for Brentford (Mr. Joynson-Hicks), in the course of his observations, stated that while it was true we had increased our training schools from one to eleven we had only taken over a number of the civil flying schools. It is not at all in accordance with the fact to say that is all we have done. While it is true that we have taken over two such civil schools for flying, we have increased our original one to eleven. The hon. Member for Brentford again referred to the time which it took to replenish the depredations caused by accidents or by gun-fire upon our aircraft. That is really only the same difficulty which is found in replenishing diminished ranks in the Army at a considerable distance from your base or from your supplies. Obviously, when you lose a certain number of machines, it must take a little time in order to make them good, but I think when the facts become known it will be seen that an extraordinary short time has been taken to make good those losses. With regard to the losses, I would say that the wastage, of course, has been very large, as I dare say the House knows. Again, I cannot go into figures, but they have been all made good, and an enormous number more have been supplied. It is, of course, a fact that you cannot constantly fly in the air without such accidents happening, not only accidents which occur through something which you cannot foresee, but also through gun-fire and shell-fire from the enemy.

The only other point which strikes me, and on which I think it is desirable that some statement should go out from the War Office, is the question of the height at which aviators fly. I think the hon. Member stated that one officer was put into a machine which could not climb, and was probably exposed to great risk, and that we were giving orders which were calculated to be very dangerous to our flying officers. I wish the hon. gentleman and the House to realise that there is a definite minimum height below which officers are not allowed to fly across the German lines, and any officer or man who crosses the German lines at a height below that minimum is contravening instructions. I am bound to say I do not believe that it is ever done, and if it has been done it is possibly an isolated instance of someone who has done something which he ought not to have done. I do not know whether the hon. gentleman complained of the fact that there were not sufficient non-commissioned officers and men in training, but that is one criticism which has been made. I would say that we are training many more non-commissioned officers and men now. The reason for the temporary abandonment, not the complete abandonment, but the diminution in the number being trained at one time, was that it was found that non-commissioned officers and men were very extravagant in aeroplanes, and we had not a sufficient number of aeroplanes to allow them to make experiments. There was a considerable diminution in the number of non-commissioned officers and men being trained, but now we are expanding the number very much, and as we have many more non-commissioned officers and men to select from, we are able to select the best, and we are training a considerable number more.

aeroplane recently mentioned by the official eye-witness; and if not, why not?

Mr. Tennant: The answer to the first part of the question is in the affirmative and to the second part in the negative. The provision of other types of aeroplane was more urgent, and it is very doubtful whether the two-engined German aeroplanes which have been seen are of the type advocated by Sir David Henderson. I am informed that they are not necessarily more efficient than single-engined machines.

Answering a further question by Mr. Lynch, Mr. Tennant said the preliminary questions of design had been considered before the war. It was undesirable to state whether the Royal Aircraft Factory took any steps before the war to provide the multiple-engine aeroplane advocated by General Henderson. The types of aeroplanes to be constructed for war were not selected by the Royal Aircraft Factory but by the Director of Military Aeronautics.

AIRCRAFT AND THE WAR.

FROM its Milan correspondent the PETIT PARISIEN received the following information on the 13th inst. :—

"Austrian aeroplanes have shown fresh activity during the past few days. On Thursday morning last a biplane bombarded Boquette, in the region of San Giorgio Nogaro, where several persons were injured. Another biplane attacked Schio, an industrial town, which, despite its vicinity to the theatre of operations, has continued work as usual.

"Venice was bombarded on Sunday for the fourth time. At eight o'clock in the morning an aeroplane, flying at a height of 2,000 metres, threw the first bomb. It succeeded in demolishing a small dwelling-house, while another bomb fell on a working man's dwelling, and two women and a child who were in the house were injured. Two bombs fell in the lagoon only a few yards away from the Palace of the Doges. At the first alarm the population rushed out into the streets, where they followed the fight carried on by the sentries firing from the house tops at the aeroplane.

"The aviator succeeded in escaping from the projectiles, which exploded all round him, but before disappearing he dropped a shower of small arrows, one of which literally pinned a woman's foot to the pavement in the street."

Mr. Gerald Morgan, writing last week to the DAILY TELEGRAPH regarding the fighting in the Vosges, said :—

"Then we climbed down the mountain, stopping to watch the Germans shell a position captured from them the day before by the French, a position in the region of the valley of the Fecht. Overhead a French aeroplane reconnoitred, while shells from the German anti-aircraft guns burst round it, sometimes so close that one held one's breath, sometimes half a mile away. At length it returned in safety to its lines."

The DAILY MAIL correspondent in Rotterdam, writing on the 14th, said :—

"Twelve Allied aeroplanes scouted over the Ghent-Terneuzen Canal, along which there are many fortifications. Bombs were dropped and much damage was caused. The Germans opened a heavy fire, but with great pluck and skill the airmen discharged all their bombs and escaped without serious injury. In order to prevent the full extent of the damage from becoming known the enemy placed a strong guard round the damaged area."

In the *communiqué* issued in Berlin on the 15th inst., there was the following :—

"A French aeroplane was hit while flying over our lines, and came down within the enemy's lines on fire. Another machine was shot down near Heneinhetard. The pilot and the observer, who were both wounded, were captured."

An Exchange correspondent at Rotterdam reported the following on the 15th inst. :—

"A telegram from the Hook of Holland states that a Dutch trawler has picked up in the North Sea four large glass tubes containing asphyxiating gas, apparently dropped from German aircraft. The tubes have been confiscated by the military authorities at the Hook for examination."

The DAILY TELEGRAPH correspondent at Rotterdam, writing on the 15th inst., said :—

"In the last few days several daring raids have been carried out by the Allies' airmen on various important points behind the German front. In one attack an ammunition dépôt between Roulers and Courtrai was destroyed; in another, great damage was done to the harbour works at Ghent, known as Port Arthur, where the Germans have established an important base. Yesterday a succession of aviators dropped bombs on the sea wall at Zeebrugge."

A Reuter message from Amsterdam on the 15th stated :—

"Last Monday four aeroplanes bombed the Cenakel at Meenen, which was formerly a girls' school. It is now used as a casino by officers, several of whom were killed and wounded.

"Early yesterday bombs were dropped on the breakwater at Zeebrugge, and for twenty minutes a fierce cannonade from anti-aircraft guns was audible."

An Exchange message from Athens on the 15th inst. stated :—

"On Sunday an Allied cruiser, aided by torpedo boats and aeroplanes, bombarded the Turkish right wing near Aribournu."

In the NEUES WIENER JOURNAL of the 15th it was reported that a squadron of Serbian aviators had on the

previous day again bombarded the fortress of Peterwardein. One of the aviators was shot down.

Details as to the damage resulting from the raid were not given, possibly, therefore, it was serious.

In the German *communiqué* of the 16th there was the following :—

"Our airmen dropped bombs on enemy troops at Gerardmer."

The MORNING POST correspondent at Petrograd, writing on the 16th inst., said :—

"At Oikeniki, thirty miles south of Wilna, and a couple of miles east of the railway, a German Albatros with a pilot and an observation officer were captured by the Russians. Bombs have been thrown from aeroplanes on Ostrolenka."

Writing from Paris on the 18th inst., the TIMES correspondent said :—

"Twice during the past week German aeroplanes attempted to reach Dunkirk. On Tuesday, five enemy aircraft made desperate efforts for about half-an-hour to fly above the town, but they were eventually driven seawards by the fire of the French batteries.

"Another squadron, heading for Dunkirk, was signalled at 7 o'clock next morning, but only one of its number succeeded in getting near the outskirts of the town, and the anti-aircraft guns of the entrenched camp quickly compelled that one to retire.

"Bombs are said to have been dropped on the dunes without occasioning any damage."

Mr. A. Beaumont, writing from Milan to the DAILY TELEGRAPH on Monday, said :—

"The Italian dirigibles continue to show great activity round Gorizia, where they are perpetually menacing the enemy's lines of communication. An attack of three Austrian aeroplanes on the undefended town of Bari, where they dropped eight bombs and killed six persons outright, has caused violent indignation, and happened, curiously enough, on the same day on which the letter of Cardinal Gasparri to the Bishop of Rimini was published, saying that the Pope had written specially to the Austrian Emperor asking him to conduct the war on humane lines and respect undefended towns on the Adriatic. But it seems that nothing short of the fearless and vigorous action of Hildebrand, who, as Gregory VII., brought German Emperors to terms, would have any effect to-day."

The DAILY MAIL correspondent in Paris on Monday wrote as follows :—

"'We were chasing him, two of us,' said a French flying officer the other day, describing a Taube hunt. 'It promised to be a fine run. Clear sky except for one great white cumulus cloud. Up and up on him we came. The gunner in the leading aeroplane of our two was just getting ready to open fire, when—bang into the cloud went the German. Disappeared utterly. Swallowed up like a pill.

"'All right,' we thought. 'He's got to come out some time.' So we began making great circles round the cloud. We went on waiting. I had begun to wonder if the aeroplane hadn't been dissolved inside when suddenly my gunner by my side simply screamed with rage. Out of the cloud below us, falling head downwards, shot the German plane for a thousand feet, and then, righting itself, went off at 100 miles an hour for the German lines. He had us fairly."

The following account of how a French aviator silenced the big gun which bombarded Dunkirk was sent from Boulogne on Monday by the DAILY TELEGRAPH correspondent, who obtained it from the pilot, now in hospital at Boulogne :—

"Sergeant Mennerat, for such is the hero's name, passed a very perilous time in destroying the German long-distance battery. The enemy had installed all around the dug-out, that had been specially thrown up and fortified for the reception of the colossal gun, a number of powerful anti-aircraft cannon. As soon as the French aviator made his appearance above the gun the anti-aircraft cannon started to open a long and fierce fire on the machine. At the commencement the shells exploded far from their mark.

"Mennerat rose to a height of 2,200 ft., and from here his passenger dropped a number of bombs that completely put the German 'Kolossal' gun out of action. Suddenly, however, a missile fired from one of the anti-aircraft guns hit the Frenchman's machine, causing a part of the tail of the aeroplane completely to snap off. The machine rocked about from side to side, little by little it was sinking to earth. The sergeant had been hit slightly, whilst

the passenger also was touched by pieces of flying shell. The sergeant saw what would happen if he did not act quickly, and, with a supreme effort, he got his damaged plane under control. With a cool head and a strong determination he turned his machine round, and followed by showers of bullets, he carefully piloted it towards the French lines just fifteen miles away.

"He eventually reached the lines, and when his machine was overhauled it was found that five large missiles had hit it."

Writing from Petrograd on July 20th, the MORNING POST correspondent said:—

"On the subject of aeroplane work I hear that a well-known Russian scientist recently distinguished himself as an air scout. Being with the army in Galicia as a volunteer, he had interested himself particularly in aviation, and became a very useful observation officer by reason of his scientific knowledge. One day a German plane, apparently by mistake, descended behind the Russian lines, and the pilot and observation officer were promptly taken prisoners, to their great astonishment. Their plane was in perfect order, and the Professor, with a military pilot, immediately saw his chance, and climbed into the cab. They rose as rapidly as possible in order to escape any firing from their own side, and made for the German lines. Having flown at first at a considerable height, they descended to a good inspection range, and thoroughly examined everything visible, making notes and plans at leisure. All went well until they found themselves approaching what was evidently the headquarters of the German aviation section, where they could see preparations being made for their reception with supposed valuable information about the Russian dispositions. There was

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An Aviation Company v. The King.

IN the Court of Appeal, on the 14th inst., before the Master of the Rolls and Lords Justices Pickford and Warrington, an appeal was heard from a decision of Mr. Justice Avory in the King's Bench Division, who held that the appellant company had established no right in law to obtain compensation for property requisitioned for military purposes. The Press were requested not to mention the locality of the property or the name of the appellant company. The matter came up upon a petition of right by the aviation company whose ground had been taken by the Crown, and they claimed that they had a right in law to be paid compensation. Mr. Justice Avory held that by virtue of his war prerogative the King was entitled in the circumstances to take possession of the property. In addition to that, under the regulations of the Defence of the Realm Act, the competent naval and military authorities had an absolute and unconditional power during the continuance of the war to take possession of land and buildings and to do any other act for the public safety and the security of the realm, even though that act interfered with private rights of property. The appellants had, therefore, failed to establish any right in law to compensation, and he entered judgment for the Crown. He thought, however, that the company were entitled under the recommendations of the Royal Commission of Inquiry of March 31st last to apply for compensation for loss or damage suffered through interference with their property.

Mr. Leslie Scott, for the appellants, urged that the prerogative of the Crown to take possession only existed where there was a present and urgent necessity, as, for instance, in the event of an actual invasion, which would be a necessity justifying the King in overriding the private rights of his subjects for the purpose of defending the realm. Counsel said he did not dispute that the Crown was entitled to take possession of the land under the Defence of the Realm (Consolidation) Act, but the only question was whether it was entitled to do so without paying compensation for the pecuniary loss the company had suffered by reason of what had occurred.

The Solicitor-General contended that at common law the undoubted prerogative of the King in time of war was to do what was necessary for the defence of the realm, even if it interfered with private property and private rights. By the prerogative the King was entitled to take such steps as might be necessary without paying compensation to anybody except as a matter of grace. Owing to the exigencies of the situation the powers of the King's prerogative had come into force, and the scope of the prerogative had not been impaired by any statutory enactment.

For legal purposes no distinction could be drawn between an invasion by Zeppelins and the old method of invasion by the landing of troops.

Mr. Scott, on behalf of the suppliants, said there was no evidence that the Crown in the present case had taken possession of their land because of any emergency which had arisen. The occupation of the land by the Crown was not necessary in any way for the protection of the realm.

The Master of the Rolls expressed the opinion that the possibility or probability of an aeroplane raid by the enemy was an "emer-

an extremely awkward moment when over the aerodrome, they were flying so unusually low, and the German officers were not slow to note the curious movements of the supposed German plane, whose duty it was to land swiftly and expedite its report to headquarters. When it became plain that this German machine had no intention of landing and looked as if it were trying to edge upwards and away, the Germans suspected a trick, and communicated with the guns. The Russians had quite an exciting time, but eventually got back safely with a mass of priceless information.

"On Sunday a Russian 'Dreadnought' aeroplane had an exciting fight with three German aeroplanes. A Russian Sikorsky plane was out scouting when three German aviators attacked from above, below and from one side. Some accident prevented the Russian plane bringing its full armoury to bear, but one of the German machines approaching too near was so badly damaged by the Russian fire that it fell headlong. The Sikorsky plane had several of its motors and one of its propellers put out of action, besides receiving no fewer than sixteen holes in its benzine tanks. Considerable damage was also done to the stays and stringers. The captain of the plane was twice wounded, and one of the crew had both hands frozen in endeavouring to stop the leaks in the benzine tanks at the great height at which this aerial battle was fought. The Russian plane when attacked was over two miles above the ground, an altitude at which the summer weather, even so far south as the neighbourhood of Krasnostav, where this occurred, had no effect on the temperature, and the cold was increased by dealing with evaporating benzine. The Russian plane reached home again in spite of its serious injuries, which would have destroyed twice over any other form of heavier-than-air machine yet known."

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gency." The Court was unanimously of opinion that the appeal failed and must be dismissed, with costs. He and the Lords Justices would at a later date state their reasons for coming to that conclusion.

London's Anti-Aircraft Corps.

IN reply to a question asked in the House of Commons, on Monday, Dr. Macnamara, Parliamentary Secretary of the Admiralty, said the question of the transfer of the Anti-Aircraft (London) Corps from the Admiralty to the War Office was under consideration, but no final decision had yet been come to in the matter.

The R.N.A.S. Recruiting Station.

THOSE who contemplate joining the ranks of the Royal Naval Air Service should note that the recruiting office has now been transferred from Hendon to the Brook Green Skating Rink, Hammersmith.

Mysterious Aeroplanes in Canada.

THE TIMES correspondent at Toronto sent the following message on July 20th:—

"The Government is investigating frequent reports of the appearance of aeroplanes in the neighbourhood of Montreal. It is suspected that these machines are responsible for the recent nitro-glycerine explosion in powder works at Rigaud."

Mr. Orville Wright on Military Aeroplanes.

ADVICES from New York state that Mr. Orville Wright, in announcing his decision to join the newly-formed U.S. Naval Consulting Board for the development of inventions, expressed the opinion that the U.S. Government should immediately order thirteen waterplanes for the Navy and 700 aeroplanes for the Army. In view of the difficulty of obtaining satisfactory motors he thinks it would take six months to complete the machines and he advocates training three men for each one built.

According to a message from the DAILY TELEGRAPH correspondent in New York, Mr. Wright holds that the military tactics of the future will necessitate the employment of a large number of flying machines in big bodies for the purpose of the destruction of bridges and supply bases, and interrupting the lines of communication.

America he regards as behind Europe in developing the art of flying, but he fully realises the importance of learning every lesson of the present war, and with her inventive resources mobilised the United States will soon have a few surprises for Europe.

Promotion for Vedrines.

MESSAGES from Paris on the 15th inst. stated that Jules Vedrines, who is now attached to the French Sixth Army, had been specially mentioned in Army Orders, and promoted to Serjeant-Major, for having "undertaken with complete success a mission of especial difficulty and danger." He is said to have flown over 1,000 hours since he has been on active service.

Aeroplanes for Turkey.

A REUTER message from Athens on July 15th stated that eleven trucks of benzine and eight aeroplanes had arrived at Constantinople on the previous Monday.

Models

Some American Models.

Writing from Paterson, New York, U.S.A., Mr. J. R. Stone says:—

"I have certainly profited by the pictures and descriptions of models in *Flight*, so I thought perhaps you might like photographs of some American machines. I am enclosing three snapshots, two of one of my tractors and one of a small twin-propeller model.

"The tractor, which is of the twin-screw biplane type, was originally built in August, 1913. It has been smashed, rebuilt, and

"Pattern B, the same, or better reversed (*i.e.*, outer half *positive*), and leading edge of tip neutral.

"Pattern A, outer half *positive* and raised nearly to horizontal, leading edge of tip *ultra-positive*.

"A line between wing tips should pass just above c.g. but below wing bi-section. The variation between opposing planes is very small. The tail is entirely removed.

"In each pair of experiments the wings being rigidly adjusted to balance perfectly in *straight flight* were so retained in *banked flight*,



Two models made by Mr. J. R. Stone, an American reader, who describes some of his work in model aviation on this page.

altered several times since then. In its present state the *fuselage* is 37 ins. long, the upper plane 30 ins., the lower plane 22 ins. Its propellers are 8 ins. diameter, about 15 ins. pitch, driven by 10 strands of $\frac{1}{8}$ in. rubber. The model is somewhat heavy, weighing about 8 ozs. With this machine I have obtained 35 seconds *hand-launched*, and about 30 seconds *r.o.g.*

"The small model is of the twin-propeller A-frame type, with front elevator. The frame is 33 ins. long, the main plane 22 ins., and the elevator 10 ins. The propellers are $5\frac{1}{2}$ ins. diameter, driven by 4 strands of $\frac{1}{8}$ in. rubber at about 1,100 r.p.m. Complete with landing chassis it weighs about 3 ozs.

"It was built for stunt flying, such as looping, spectacular flights, &c. It is very fast and climbs very rapidly. Its usual duration, minus chas-is, is about 70-80 secs., but I recently obtained a flight of 153 secs. with it. On this flight it climbed to an altitude of about 400 ft., and occupied over 70 secs. in gliding. This flight was made on the afternoon of May 30th in a light breeze, and was witnessed by a score of members of the New York Model Aero Club, who were having a contest.

"At present I have also a large tractor monoplane nearly finished and a duration machine and a hydro half completed. I have very little time to devote to the machines, and there are no decent flying grounds within several miles of my home, so it is only rarely I can get a good day's flying, but I certainly enjoy it when I can. With best wishes for *Flight*."

Natural Gliding Forms.

The Rev. A. J. Bartlett sends the following notes, supplementary to those which appeared in our issue of the 25th June:—

"In pursuance of my theory of the desirability of a true monoplane possessing 'all-round' stability independently of a tail plane, I noted in nature's best gliders, *e.g.*, the gull, butterfly, and bat, certain features common to them all. To mention three: (1) The wing plan is roughly concave at the anterior and convex at the posterior margin; (2) the tail plane is small and normally neutral, or is non-existent; (3) the wing planes are uneven, *i.e.*, of varying section from root to tip.

"Adopting the last feature I obtained tail-less gliders of all three plans, bird, butterfly, and bat.

"Further, of three types of wing-plan, viz., straight, crescent, and indented (omitting their distinctive behaviour and the effects of varied aspect in elevation), the indented type appeared most consistently to maintain its direction of flight continuously either in a straight or circular course.

"Of this type I experimented with three patterns outlined in my sketch (Fig. 1), and of these pattern B gave on the whole the best all-round results.

"Pattern C requires inner half of wing *positive*, outer half *negative* and lowered, leading edge of tip *ultra-negative*.

i.e., they were purposely not warped; and the flights were in still air. In practice such an inherently stable glider would require advantageously only an *initial* corrective action of stabilisers, *i.e.*, wing-ends or tail.

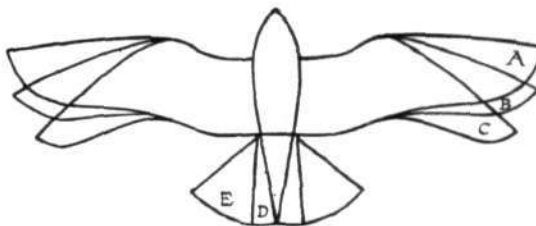


Fig. 1.—Various forms of gliders experimented with by the Rev. A. J. Bartlett. D, normal tail plane; E, tail expanded in emergency.

"From observed effects a vertical fin or rudder is very undesirable, horizontal steering being best effected by minute variation of the negative wing-ends, not by the tail, whose function lies mainly in the vertical plane.

"The most valuable features in the form of glider described are (1) its quick recovery from a dive (dropped head-down from the hand it regains an even keel before reaching the ground); (2) its



Fig. 2.—Gull (tail view) swooping in teeth of a gale.

quick recovery from side-slip (dropped sideways from an increased height it *slows round* to the head-down position, whence it regains an even keel as before); (3) theoretically, its power of recovery from stalling (dropped tail down it would lift on the raised and expanded tail plane, straighten out, plunge, and recover as before).

"May I, in conclusion, briefly illustrate a theory of *speed-variation* from my observation of a gull (Fig. 2) driving at immense speed against a gale of wind, and viewed from behind. The outer half of the wing, which is normally slightly negative or less positive than the inner half, has become very markedly negative, showing the under surface.

"Though, perhaps, impossible in an aeroplane to reduce wing area like the gull, such increased *negative* warp, or its equivalent, is possible, and would reduce lift, counteract the forward travel of supporting centre, and increase stability."

THE CAUDRON DINNER.

THE First Annual Dinner of the employees of the British Caudron Co., Ltd., which was held at Frascati's Restaurant, Oxford Street, last Saturday evening, was an extremely gratifying affair in more ways than one. In the first place, it served as an indication of the proportions to which this Company has grown, for although many of the members were unable to put in an appearance, it was an imposing muster that sat down to the excellent dinner provided. Secondly, the evening was proclaimed by all in every way successful. The chair was taken by Mr. Alfred Newman, the able and popular works manager, who, by the way, was responsible for a very pleasing design—showing a 100 h.p. Caudron in flight—on the cover of the menu and programme. He was supported—figuratively speaking, of course—by Mr. A. M. Ramsay, Mr. Bathurst (secretary), Mr. René Desoutter (chief pilot), and Mr. R. Simpkins (business manager). Unfortunately, Sir William Ramsay and Mr. Hunter were unable to be present, being away in Scotland on important business; but each thoughtfully sent a telegram wishing the gathering all success. There was but little speech-making, but Mr. Ramsay, in responding to his toast, made a few remarks on the magnificent manner in which all worked together in perfect harmony; the Company, he added, were out for business, but for all that they intended to do their bit in supplying the country with aeroplanes, and to treat their staff well, and he was glad to say that in this they were successful—they had a good machine and a contented staff. Needless to say, these remarks brought forth cheers loud and long. After the dinner an extremely pleasant concert was given, the organisation of which was due to Miss Edith Bathurst, who, besides singing some songs, played a recruiting march of her own composition named the “Wake Up, England, March.” In addition to turning out good aeroplanes, the Caudron Co. showed that they could produce good singers as well, for the programme included several members of the staff, one of whom, Mr. Tom Griffiths, possessed a decidedly pleasant tenor voice. Other artists who assisted in the evening's entertainment were Miss Gladys Norcott, Miss Dorothy Kerr (violin), Miss Maisie Cuthbert, Mr. Arthur Drew (piano), Mr. H. Browning, Mr. Walter Kingsley, Mr. Morris Charles, Mr. Chas. F. Grossmith, Mr. Victor Maisey, and Mr. Ernest Walton. This first annual dinner was certainly a success; may the second, and the many others that we hope will follow, be even more successful.

Italian Flying Officer Killed.

ACCORDING to an Exchange message from Rome on July 20th, the famous Italian aviator, Captain Bolla, after reconnoitring the enemy's positions, fell from a height of 1,200 ft. into the Italian lines and was killed.

Fatal Accident to Swedish Officers.

A MESSAGE from Copenhagen on Monday stated that Lieut. Malmquist and Count Hamilton, two well-known Swedish pilots, were killed at Karlskrona on Sunday morning. The motor of the aeroplane stopped in mid-air and the machine fell like a stone.

NEW COMPANIES REGISTERED.

E. M. D. Synd., Ltd.—Capital £1,000, in £1 shares (900 preferred ordinary and 100 ordinary). Mechanical and electrical engineers, manufacturers of and dealers in aerial conveyances and aircraft and component parts thereof, builders of hangars, garages, sheds, and aerodromes, &c.

Invicta Glass and Nautical Instrument Co., Ltd.,
Alderman's House, Bishopsgate, E.C.—Capital £10,000, in £1 shares. Makers of nautical, meteorological, and optical instruments, apparatus useful for navigation by water or air, &c. The Company has been incorporated with a view to the conversion of the business carried on by E. Roberts. Chairman and managing director, E. Roberts.

National Aero Defence League (Proprietary), Ltd.,
Clun House, Surrey Street, Strand, W.C.—Capital £2,200, in
2,000 shares of £1 each and 4,000 shares of 1s. each. Objects, to
organise fêtes, demonstrations, and ceremonial and other public and
private functions for aiding, encouraging, and developing aviation
in the interests of national defence; to promote the establishment
of funds by means of national or other collections for the purpose
of giving aeroplanes, aerodromes, hangars, equipments, engines,
and the services of pilots and others to the Government for use in
aerial defence; to establish, maintain, and carry on schools of
aviation; to give scholarships for the study of aviation; to experi-
ment with, manufacture, import, export, and deal in balloons,
aeroplanes, hydroplanes, airships, and aerostats of all kinds. First
directors, J. H. Swinburn and G. T. Hunt.

ENEMY PATENTS RELATING TO AERONAUTICS.

THE following list of British patents which have been granted in favour of residents of Germany, Austria, or Hungary, is furnished in view of the new Patents Acts, which empower the Board of Trade to grant licences under certain conditions to British subjects to manufacture under enemy patents—which licences can be retained after the war—and is specially compiled for *Flight* by Lewis Wm. Gould, Chartered Patent Agent, Enrolled Patent Attorney in the United States, 5, Corporation Street, Birmingham. It is desirable in the first instance to obtain a full copy of the patent specification (price 6d. each patent), and also the latest particulars upon the Patents Register. If any patent listed has been assigned to a non-enemy proprietor, the law does not apply.

No. 19050/12. Parachutes. A parachute, applicable as a fire-escape as well as for aeronauts, is adapted to be projected clear of its mounting and also to be expanded by gunpowder charges or by compressed air. The projection of the parachute is effected by arranging the stem thereof to slide in a tube fixed to the aeroplane, or near the window of a building, &c., and containing a charge of gunpowder which can be fired by a percussion cap and spring-actuated striker controlled by a cord. Augzd, A. Odokolek, Baron, Vienna. Dated Aug. 21st, 1911.

Augезд, A. Odkolek, Baron, Vienna. Dated August 23rd 1911.
No. 19152/12. Parachutes; orndance. To prevent recoil of the device described in the parent specification for projecting a parachute from an aerial machine, &c., a simultaneous discharge is effected in an oppositely directed extension of the discharge tube for the parachute stem. Augезд, A. Odkolek, Baron, Vienna. Dated November 4th, 1911. Addition to 19050/12.

PUBLICATIONS RECEIVED.

National Physical Laboratory Report for the Year 1914-15.
Teddington: The National Physical Laboratory.

National Physical Laboratory: Collected Researches. Vol. XII, 1915. London: Harrison and Sons, St. Martin's Lane, W.C. Price 12s.

How Belgium is Fed: the Work of Saving a Brave Nation from Starvation. The National Committee for the Relief in Belgium, Trafalgar Buildings, Trafalgar Square, S.W.

Aeronautical Patents Published.

Applied for in 1914.

Published July 22nd, 1915.

733. A. P. BIAIS, J. J. CAMBON, and C. M. J. BAILLOD. Aeroplanes.
1,049. BRITISH EMAILITE CO. Material for construction of invisible
aviation apparatus.
4,111. JACOB LOHNER and Co. Safety belts.
9,876. G. LILIENTHAL. Wings for aeroplanes.
14,775. F. SCHNEIDER. Exhaust box for aeroplane engines.
15,494. I. BELL. Aerial machines and apparatus.

Applied for in 1915.

Published July 22nd, 1915.

- 3,890. A. CLEMENT-BAYARD. Cooling of aeroplane engines.

The Editor is always pleased to consider articles or photographs suitable for the pages of FLIGHT, which will be paid for at the usual rates. All communications should be addressed to the Editor, FLIGHT, 44, St. Martin's Lane, London, W.C.

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